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**The impact of child labour on health and  
psychosocial status of working children  
aged between 10 and 16 years  
in Jordan**

**by**

**Hasan Mah'd Hawamdeh**

**A thesis submitted in fulfilment of the Requirement  
for the degree of Doctor of Philosophy  
in Medicine**

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TABLE OF CONTENTS	
	Page
Table of contents	I
List of tables	VII
Acknowledgements	X
List of abbreviations	XII
Abstract	XIV
<hr/>	
<b>CHAPTER ONE: INTRODUCTION</b>	<b>1</b>
1.1 Historical background	2
1.2 Statistics on economically active children	4
1.3 Reason of child labour	7
1.4 Traditional approach to control child labour	8
1.5 Child labour and health	10
1.6 Overview of thesis	13
<hr/>	
<b>CHAPTER TWO: OBJECTIVES</b>	<b>14</b>
2.1 Objective of the study	15
2.2 Hypotheses	16
2.3 Rationale and contribution of the study	17
<hr/>	
<b>CHAPTER THREE: THE STATE OF JORDAN</b>	<b>19</b>
3.1 Population	20
3.2 Economy	22
3.3 Health in Jordan	25

---

<b>3.4</b>	<b>Children in Jordan</b>	29
	3.4.1-Infant mortality rate	30
	3.4.2 Immunisation status	30
	3.4.3 Diarrhoeal diseases control	32
	3.4.4 Acute respiratory infection	34
	3.4.5 Nutrition	35
	3.4.6 Chronic disease	36
<b>3.5</b>	<b>Child labour in Jordan</b>	37
<b>3.6</b>	<b>Disabilities in Jordan</b>	39
<b>3.7</b>	<b>Child abuse</b>	41
<b>3.8</b>	<b>The UN Convention on Rights of the Child in Jordan</b>	41
<b>3.9</b>	<b>Summary</b>	50

---

	<b>CHAPTER FOUR: LITERATURE REVIEW</b>	51
<b>4.1</b>	<b>Introduction</b>	52
	4.1.1 Primary search	52
	4.1.2 Secondary search	52
<b>4.2</b>	<b>Extent and nature of child labour</b>	54
<b>4.3</b>	<b>Child labour and household characteristics</b>	65
	4.3.1 Child labour and economic status	65
	4.3.2 Family size and child labour	70
	4.3.3 Education and child labour	72
<b>4.4</b>	<b>The impact of globalisation and transnational corporations on child labour.</b>	76
<b>4.5</b>	<b>Child labour and legislation</b>	80
	4.5.1Child labour and international organizations	80
	4.5.2 United Nation Convention on the Rights of Children and child labour elimination	84
	4.5.3 Child labour legislation and local governments	91

---



4.5.4	Child labour - between law and practice	96
4.5.5	Jordan and child labour legislation	98
<b>4.6</b>	<b>Child labour and health consequences</b>	<b>100</b>
4.6.1	Nutritional status and morbidity prevalence in the context of child labour	100
4.6.2	Psychosocial problems and child labour	116
<b>4.7</b>	<b>Conclusion</b>	<b>118</b>

---

<b>CHAPTER FIVE: MATERIAL AND METHODOLOGY</b>		<b>121</b>
<b>5.1</b>	<b>Introduction</b>	<b>122</b>
<b>5.2</b>	<b>The research approach in this study</b>	<b>123</b>
5.2.1	Phases of the study	123
5.2.1.1	<i>Phase one</i>	123
5.2.1.2	<i>Phase two</i>	125
5.2.1.3	<i>Phase three</i>	125
<b>5.3</b>	<b>Setting</b>	<b>125</b>
<b>5.4</b>	<b>Study Population</b>	<b>127</b>
<b>5.5</b>	<b>Ethical considerations</b>	<b>128</b>
<b>5.6</b>	<b>Study Design</b>	<b>133</b>
<b>5.7</b>	<b>Sample size</b>	<b>134</b>
<b>5.8</b>	<b>Sampling</b>	<b>136</b>
<b>5.9</b>	<b>Instruments</b>	<b>141</b>
5.9.1	Questionnaires	141
5.9.2	Adaptive Behavior Scale	145
5.9.2.1	<i>– reliability and validtiy of instrument</i>	145
5.9.3	Anthropometrics measurements	146
5.9.3.1	<i>- height for age</i>	147
5.9.3.2	<i>- weight for age</i>	148
5.9.3.3	<i>- Skin fold thickness</i>	149

---

5.9.4 Peak Expiratory Flow Rate (PEFR)	150
5.9.5 Packed Cell Volume (PCV)	150
5.9.6 Socio-economic Status measures	152
<b>9.10 Content validity and reliability of instruments</b>	<b>158</b>
<b>5.11 Data Collection and processing</b>	<b>158</b>
5.11.1- Pilot study	158
5.11.2- Data collection	161
<b>5.12 Data analysis</b>	<b>163</b>
<b>5.13 Summary</b>	<b>165</b>
<hr/>	
<b>CHAPTER SIX: RESULTS</b>	<b>166</b>
<b>6.1 Introduction</b>	<b>167</b>
<b>6.2 Descriptive analysis</b>	<b>169</b>
6.2.1 Demographic and economic profiles	169
6.2.1.1 <i>Family size (all members including children and adults)</i>	169
6.2.1.2 <i>Household per capita income</i>	172
6.2.1.3 <i>House metre squared per capita</i>	175
6.2.1.4 <i>Household durable expenditure</i>	177
6.2.1.5 <i>Occupation of the head of the family</i>	178
6.2.1.6 <i>Smoking status in working and non-working children</i>	181
6.2.1.7 <i>Education of father and mother</i>	183
6.2.2 Health variable analysis	186
6.2.2.1 <i>Anthropometrics (height and weight z scores)</i>	186
6.2.2.2 <i>Packed cell volume</i>	191
6.2.2.3 <i>Skin fold thickness/age percentile</i>	193
6.2.2.4 <i>Peak Expiratory Flow Rate/height (PEFR ht)</i>	196
6.2.2.5 <i>Psychosocial status</i>	198
6.2.2.6 <i>Morbidity prevalence</i>	201

---

6.2.3 Work related variables	203
6.2.3.1 <i>Starting age</i>	203
6.2.3.2 <i>Duration of work in years</i>	203
6.2.3.3 <i>Working hours per week</i>	204
6.2.3.4 <i>Type of work</i>	204
6.2.3.5 <i>Child income per month</i>	205
<b>6.3 Correlation and Regression analysis</b>	207
6.3.1 Multicollinearity and interaction problems	207
6.3.2 Effects of work on the health and psychosocial status	211
6.3.3 Effect on weight	212
6.3.4 Effect on height	217
6.3.5 Effect on packed cell volume	221
6.3.6 Effect on skin fold thickness percentile	224
6.3.7 Peak Expiratory flow rate	226
6.3.8 Effect on psychosocial status	228
6.3.9 Effect on morbidity prevalence	230
6.3.10 Effect on smoking status	232
<b>6.4 Effect of work related variables, socio-economic status and smoking status (exposures) on height and weight for age z-score (outcome) of working children</b>	234
<b>6.5 Health of working children and their siblings</b>	245
6.5.1 Weight and height	246
6.5.2 Packed cell volume (PCV)	247
6.5.3 Skin fold thickness/age percentile	248
6.5.4 Working child income	251
 <b>CHAPTER SEVEN: DISCUSSION</b>	 252
7.1 Introduction	253
7.2 Household socio-economic characteristics	253

---



## Content

---

7.2.1 Family size	253
7.2.2 Household per capita income	254
7.2.3 Parents' education	255
<b>7.3 Work related variables</b>	<b>256</b>
<b>7.4 Child labour and transnational corporations</b>	<b>259</b>
<b>7.5 Child labour and health</b>	<b>262</b>
7.5.1 The effect of work and socio-economic status on weight and height	262
7.5.2 Effect of work on packed cell volume	264
7.5.3 Skin fold thickness	266
7.5.4 Peak expiratory flow rate	267
7.5.5 Morbidity prevalence and work status	268
<b>7.6 Psychosocial status</b>	<b>271</b>
<b>7.7 Work related variables and growth</b>	<b>272</b>
<b>7.8 Growth and health among working children and their siblings</b>	<b>274</b>
<b>7.9 Limitations of the study</b>	<b>277</b>
<b>7.10 Study strengths</b>	<b>280</b>

---

## **CHAPTER EIGHT: SUMMARY**

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<b>8.1 Conclusion</b>	<b>283</b>
<b>8.2 Recommendation</b>	<b>285</b>
8.2.1 Making child labour visible	285
8.2.2 Enforcement of legislation	286
8.2.3 Enforcement of education system	288
8.2.4 Economical support	289
8.2.5 Health services improvement	290
8.2.6 Actions which could be taken immediately	291

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## **REFERENCES**

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## **APPENDICES**

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## LIST OF TABLES

Table 1 :	Distribution of population by sex and governorates	21
Table 2 :	Selected economic indicators, 1987 – 1999	24
Table 3 :	Selected social indicators, 1980 – 1999	24
Table 4 :	Health centers provided by the Ministry of Health during the period 1995 and 1999	27
Table 5 :	Hospitals and beds in Jordan	27
Table 6 :	Health personal by selected category and health sectors in Jordan 1991 and 1999	28
Table 7 :	Age structure of population in Jordan	29
Table 8 :	Immunisation coverage % of infant by one year during 1988 and 1999	32
Table 9 :	Under-five diarrhoea morbidity and mortality rates	34
Table 10 :	Causes of death among Jordanian's children in the 1st year of life, 1998	35
Table 11 :	Chronic diseases among population between 1999 and 2000.	37
Table 12.	Cohort and Case-control studies examining the relationship of child labour with growth	114
Table 13 : .	Occupations weight as assessed by the Jordanian community	155
Table 14 :	Per capita income categories	156
Table 15 :	Occupations categories	156
Table 16 :	Education level categories	157
Table 17 :	House Density	157
Table 18 :	Running cost of common durables	157
Table 19 :	Socio economic profile of working and non-working children	182



## Content

---

Table 20 :	Comparison of demographic and socio-economic variables for working and non-working children	183
Table 21 :	Education levels of working and non-working children	185
Table 22 :	Characteristics of health variables among working and non-working children	194
Table 23 :	Working and non-working children distributed by different levels of wt and ht for age z-score.	195
Table 24 :	Peak expiratory flow rate/height ratio for working and non-working children	198
Table 25 :	Comparison of psychosocial status score of working and non-working children in relation to age groups	201
Table 26 :	Morbid conditions among working and non-working children	202
Table 27 :	Morbidity rate among working and non working children.	202
Table 28 :	Work related variables characteristics among working and non-working children	206
Table 29 :	Bivariate correlation coefficients between socio-economic variables among working and non-working children	210
Table 30 :	Effect of work on health status indicators, psychosocial variables and smoking status of working and non working children	211
Table 31 :	Effect of work, socio-economic status variables and smoking status on weight for age z-score	216
Table 32 :	Effect of work, socio-economic status variables and smoking status on height for age z-score	220
Table 33 :	Effect of work, socio-economic status variables and smoking status on packed cell volume (PCV)	223

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## Content

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Table 34 :	Effect of work, socio-economic status variables and smoking status on skinfold thickness percentile	225
Table 35 :	Effect of work, smoking and socio-economic status variables on peak expiratory flow rate/height	227
Table 36 :	Effect of work, smoking and socio-economic status variables on psychosocial status	229
Table 37 :	Effect of work, smoking and socio-economic status variables on morbidity prevalence	231
Table 38 :	Effect of work, and socio-economic status variables on smoking status	233
Table 39 :	Bivariate correlation coefficients of work related variables on growth variables (wt z-score, ht z-score, PCV, skinfold thickness) and psychosocial status	235
Table 40 :	Effect of work related variables, maternal height and per capita income on weight for age z-score	238
Table 41 :	Effect of work related variables, maternal height and per capita income on height for age z-score	242
Table 42 :	Age profile of working and non-working children	245
Table 43 :	Health variable characteristics among working children and sibling	249
Table 44 :	Comparison between weight z score, height z score and PCV of non-working children and their siblings	250
Table 45 :	Comparison between weight z score, height z score and PCV of working children and their non-working siblings	250
Table 46 :	The effect of proportion of household income earned by working child on the growth variables of siblings.	251



**LIST OF FIGURES**

Figure 1: Conceptual Framework for the Study of Child Labour and Health Framework	24
Figure 2: Family size of working children	171
Figure 3: Family size of non-working children	171
Figure 4: Per capita income of working children	174
Figure 5: Per capita income of non-working children	174
Figure 6: House area m2 of working children	176
Figure 7: House area m2 of non-working children	176
Figure 8: Head family occupation weight of working children	180
Figure 9: Head family occupation weight of non-working children	180
Figure 10: Weight z score of working children	189
Figure 11: Weight z score of non-working children	189
Figure 12: Height z score of working children	190
Figure 13: Height z score of non-working children	190
Figure 14: Packed Cell Volume of working children	192
Figure 15: Packed Cell Volume of non-working children	192
Figure 16: Peak Expiratory Flow Rate/ht of working children	197
Figure 17: Peak Expiratory Flow Rate/ht of non-working children	197
Figure 18: Psychosocial score of working children	200
Figure 19: Psychosocial score of non-working children	200
Figure 20: Histogram. Dependent variable: wt z score	214
Figure 21: Scatterplot. Dependent variable: wt z score	214

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## Content

---

Figure 22: Normal P-P plot of Regression Standardised Residual Dependent variable wt z score	215
Figure 23: Histogram. Dependent variable: ht z score	218
Figure 24: Scatterplot. Dependent variable: ht z score	218
Figure 25: Normal P-P plot of Regression Standardised Residual Dependent variable ht z score	219
Figure 26: Histogram. Dependent variable: wt z score	239
Figure 27: Scatterplot. Dependent variable: wt z score	239
Figure 28: Normal P-P plot of Regression Standardised Residual Dependent variable wt z score	240
Figure 29: Histogram. Dependent variable: ht z score	243
Figure 30: Scatterplot. Dependent variable: ht z score	243
Figure 31: Normal P-P plot of Regression Standardised Residual Dependent variable ht z score	244

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## Content

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## **Abbreviation**

AAMD: Adaptive Behavior Scale for Children and Adult

ANOVA: Analysis of Variance

ARI: Acute respiratory infections

BMI: Body Mass Index

CI: Confidence interval

CPU: Children Protection Unit

DPT: Diphteria, Pertussis and Tetanus Vaccine

FPSPSD: Family Protection Section at the Public Security Directorate

FLSA: Fair Labour Standard Act 9

EPI: Expanded Program of Immunisation

Hb: Haemoglobin

HBV3: Hepatitis vaccine

HIV: Human Immunodeficiency Virus

Ht: Height

ILO: International Labour Organisation

IPEC: International Programme on the Elimination of Child Labour

JD: Jordanian Dinar

M.C H: Maternal and Child Health

NCCRR: The National Centre for Children Protection and Rehabilitation

NCHS: National Centre for Health Statistics

NHF: The Noor Al-Hussien Foundation

## Content

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NGOs: Non-governmental organisations

NTFC: National Task Force for Children

OECD: Organisation for Economic Co-operation and Development

OPV: Oral Polio Vaccinations

ORS: Oral rehydration solution

OR: Odd Ratio

PANDA: The Practical Analysis of Nutritional Data

PBRC: Princess Bassma Women's Resource Centre

PCV: Packed cell volume

PEFR: Peak Expiratory Flow Rate

SD: Standard Deviation

SES: Socio-economic Status

SPSS: Statistical Package for Social Science

UN: United Nations

UNCRC: United Nations Convention on the Rights of Child

UNICEF: United Nations Children's Fund.

UNRWA: United Nations Relief and Work Agency for Palestine Refugees

VIF: Variance Inflation Factor

WHO: World Health Organisation

Wt: Weight



### Abstract

**Objective:** to examine the effects of work on health and psychosocial status among boys aged 10-16 years in Jordan

**Study design:** This is a comparative cross-sectional study, comparing working and non-working with respect to health and psycho-social outcomes, taking account of confounding due socio-economical factors.

**Method:** 135 working, 103 siblings and 405 non-working boys aged 10-16 years were studied in the Jordanian areas of Irbid, Jarash and North Jordan Valley. The boys and their parents were interviewed and data collected on work status, child's smoking status, and family socio-economic characteristics. Height, weight, skinfold thickness, PEFR, physical examination and blood sample were obtained at the time of interview. Psychosocial status was also assessed. Frequencies, means with 95% Confidence Intervals, Odds Ratios and t-test were calculated where appropriate. Coefficients of the linear equation, involving one or more independent variables, that best predict the value of the dependent variable were calculated through linear regression models fitted on height for age z-score, weight for age z-score, PCV, skinfold thickness percentile, PEFR, point prevalence of morbidity, psychosocial status score and smoking status.

**Results:** Bivariate analysis showed that child's work was a strong significant predictor for weight z score, height z score, PCV, morbidity, skinfold thickness percentile and PEFR. This significant effect persisted in the full regression models after controlling for socio-economic and smoking status. Working children had significant lower weight z score ( $B=-0.31$ ), height z score ( $B=-0.51$ ), PCV ( $B=-2.96$ ), skinfold thickness percentile ( $B=-6.85$ ) compared to non-working subjects. Psychosocial score tended to be reduced by 13 points (better psychosocial status) when the child was non-working ( $B=-12.7$ ). The significant negative relationship between work and PEFR in the bivariate model disappeared in the full regression model. In multiple regression modelling work status explained 3% of the 6.5% of variance explained in the weight z-score model, 6.7% of 9.8% for height z-score, 12.5% of 14.9% for PCV, 15% of 21% for skinfold thickness, 11% of 24% for PEFR, 9.4% of 30.9% for morbidity and 46% of 50% for psychosocial status.

Mean height and weight z-scores and packed cell volume among working children were significantly lower than those of their siblings; 5% and 9.6% of working children respectively were wasted and stunted ( $z \text{ score} < -2 \text{ SD}$ ) compared to none of the siblings. No statistically significant correlation was also found between weight z-scores, height z-scores, packed cell volume and skinfold thickness of siblings and the proportion of household income contributed by the working child.

Duration of work, child's monthly income, household per capita income and maternal height, were significant predictors of the growth of working children expressed by weight and height z score.

**Conclusions:** The results of this study suggest that, independent of a range of socio-economic factors, work has a negative effect on child growth. PCV and psychosocial status.

*Chapter one*  
*Introduction*



## **1.1 Historical background:**

Child labour still persists at the end of the 20th century all over the world. Since the earliest times, children were incorporated as soon as possible into work to contribute to the life of their families. [Shah, 1985] Mostly, they started to work within the family circle practising different kind of jobs including pastoral, farming, agro-industrial, and in domestic work. [Shah, 1984] [Shah, 1985] [Heward, 1993] At that time childhood had a very different meaning in most societies and there was no concept of children's rights or the need to protect them from work. Many parents believed that working was good for children and they viewed it as an essential process of development and socialisation of children which offered them the opportunity to acquire training and experience for their future. [Matoka, 1994 1990][Bequele and Boyden, 1988][Pollack et al, 1990][Rao, 1986] On the other hand, many others were concerned viewing the phenomenon as a hazardous activity likely to jeopardise the physical and mental well being of working children and deprive them of their rights to play, learn and enjoy a normal childhood as part of the normal socialisation process. [Satyananrayana et al, 1986][WHO, 1982][Mehta et al, 1985] [Mitra, 1993]

At the time of the industrial revolution, the phenomenon of child labour in Europe and America increased as children were a source of cheap labour, less likely to strike and used to undertake jobs which adults could not do. [Landrigan et al, 1995][Trattner, 1970] Children were sent by their parents to work in the mines

and mills because their wages far exceeded the income of the parents on the farms. [Emmeline, 1980]

Children began work between 6 and 9 years in many parts of the world. [Shah, 1985] In some countries, children under the age of 6 years were engaged to work, especially in the textile industry and in coal-mining, and worked for long hours in dark and damp mines carrying coal on their backs up to the surface.[Hunter, 1974] Other children as young as 6 or less worked for 11 to 12 hours a day accompanying their parents to help them in their work. [Shah, 1984a][Shah, 1984][Bouhdiba, 198][Heward, 1993]

The hazards and horrors of child labour in that era sparked a great popular revolution against the worst abuses of child labour. This sentiment led in the United Kingdom to the passage in 1821 of the first child labour law, “The Health and Morals of Apprentices Act”. [Landrigan et al, 1995]

In the United States, child labour became an issue especially in large cities through the 19<sup>th</sup> and into the first third of the 20<sup>th</sup> century. The 1900 census found more than 1,750,000 children between the ages of 10 and 16 years working for wages in the United States, almost one out of every five persons in this age bracket. [Postol, 1993][Derickson, 1992] The situation worsened with increased industrialisation and emigration at the turn of the century. Poor children were sent by parents as young as 6 years to work in glass factories, in dark textile mills or in coal-fields breathing the coal dust for more than 10 hours per day. [Postol, 1993]

The need for enforcement of the law to control the phenomenon of child labour



was demonstrated very late and only after the 25<sup>th</sup> of March 1911 when the fire broke out at a shirtwaist company in Manhattan. Five hundred women and children were working there for 59 hours a week. One hundred and forty six young women, many of them under 18 years, lost their lives that day. [Wertheimer, 1977]

Twenty seven years after this event in 1938, the first legislation for the regulation of child labour was enacted, the Fair Labour Standard Act 9 (FLSA). [Postol, 1993][Landrigan et al, 1995] This law established the minimum age, wage and hours for working children.

In Asia and Africa, child labour took a different shape from that in Europe and America. Children at an early age were mostly engaged in work as slaves or to pay debit bondage on behalf of their parents. Slaves had to spend long hours working in any activity demanded by the slave owner who had the power and the right over the child, since the debit bondage obligated the parents to send their children to work at the debtor activities. [Nichols, 1992][Matoka, 1994]

## **1.2 Statistics on economically active children**

Today, child labour continues to be a major problem throughout the world despite the huge efforts spent by international organisations and national governments to eradicate the phenomenon. [Matoka, 1994]

According to reports. from ILO and other agencies estimate more than 250 million of working children aged between 5 and 14 years in the developing countries; half of them work full-time. [News, 1997][Habenich, 1994]

Others consider the true extent of child labour is beyond this figure. [Berger et al. 1991] Some of them estimate at least 200 to 400 million children are economically active around the world. [Ashagrie, 1997a][Parker, 1997a] The developing countries usually are the most affected by the phenomenon. Some authors [Hunter, 1974] [ILO, 1983][ILO, 1980] stated that more than 98% of working children are living in the developing countries.

In certain countries more than 18% of children between the ages of 10 and 14 years are working; in other countries this figure may be as high as 20 to 50 percent. [Habenich, 1994] For example, in India, Senegal, Indonesia and Ghana, an average of 25% of children aged between 5 and 14 years were engaged to the labour force. [Ashagrie, 1993] Most of them are working in factories and small scale agriculture [Pinto, 1989][Maheshwari et al, 1986]; in Turkey [Dogramaci, 1985], 38% of children aged between 12 and 14 years are engaged in economic activity in Colombia, it was estimated that 40% children under the age of 14 were working. [Challis and Elliman, 1978][MacLennan et al, 1985]

A study carried out in many cities of Great Britain revealed that around 40% of school age children were engaged in part-time employment and most were working in unregulated jobs. [MacLennan et al, 1985]

Variation in the estimates might have resulted from differences in social and cultural perceptions of childhood and nature of labour in the context of child labour. In some societies childhood was defined by the age of entry into puberty, while in many other societies such criteria could not be an adequate basis of



## Chapter one: Introduction

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definition, because the exact age of the child is often not known and puberty cannot be ascertained. [Shah, 1985]

The notion of labour also appears to have an inadequate and inconsistent perception in different societies. For example, the International Labour Organisation (ILO) defined child labour as: all economic activities carried out by persons less than 15 years of age regardless of their occupational status. [Schildkrout, 1988] The definition did not include house work performed by children in their parents' home except where such work can be assimilated to an economic activity as, for example, when a child must devote his or here entire time to the work so the parents can be employed outside home. [Kerpelman, 1996][Shah, 1985]

Many others based their estimation of child labour on the participation of children in the wage labour force even though many children's work takes place outside the wage sector. [Schildkrout, 1988] Others suggested that child labour should include unpaid conventional work such as self-employment, domestic services, while others defined it as child labour when it endangers the health of children or impairs their development. [Matoka, 1994][Banerjee, 1995a]

Moreover, variation in estimates might be related to the fact that child labourers mostly are found in the informal rather than the formal sector and often working in invisible jobs. This forms a major obstacle to an accurate census.



### **1.3 Reasons for child labour**

One of the questions which requires an answer is why do children work. The answer is not easy because child labour often has multifaceted reasons. Financial and economic problems appear to be the most common reason for child labour. [Matoka, 1994][Damodran, 1997][News, 1997] Most working children are economically disadvantaged.

Various studies have shown that child labour in developing countries is primarily driven by family poverty where children are considered as an asset who can earn money to feed themselves and help the family to survive. [Sundari et al, 1984] [Mehta et al, 1985]

The poverty in these countries might be caused mainly by unjust wealth distribution of the world economic system by Northern capitalist countries. Four fifths of the world's wealth is controlled by the Northern countries known as the Developed Core. [Empereur, 2001] The relation between rich and less developed countries was unequal during and after the period of colonial rule. Resources continued to be drained from less developed to the developed countries. In 1992, partly as a result of the debt crisis there was a net flow of 19 billion from the 40 poorest countries in the world to the richest. [Godlee, 1993] As a result, most of these countries found themselves obliged to adopt structural adjustment programmes primarily consisting of spending cuts adversely affecting social and educational programmes.

These cuts hurt the lower classes of the country and make the cycle of child labour all the more difficult to break. It is a cycle since poverty and child labour are interrelated. [Sanders, 1997]

Globalisation and trade liberalisation might play a principal role in the phenomenon of child labour. There is reason to fear that children may be among the principal victims of this process. As firms and countries attempt to cut production costs in export industries, they may be tempted to employ children to acquire or maintain a competitive advantage in the world markets. Other people believe that poverty is not the only reason for child labour. For example, lack of interest in education, poor accessibility of schools, family instability, illiteracy of parents and insufficient faith in the education system to guarantee future jobs are often the reasons to join the labour force especially in developing countries. [Shah, 1985]. [Sundari et al, 1984]

## **1.4 Traditional approach to the control of child labour**

Throughout the last century, the International Labour Organisation (ILO) was preoccupied with combating child labour. It has been studying the phenomenon in order to formulate international standards aimed not only at protecting working children, but also at putting an end to the phenomenon globally. [Ashagrie, 1997a]

In 1919 the ILO declared, through its conference, that the minimum age to get work in industry should be 14 years (Convention 5). [UNICEF, 1997a]

The Convention was widely accepted at the time, but it didn't cover all sectors of



employment. A new Convention (No. 138) called Minimum Age Convention was adopted in 1973. [UNICEF, 1997a] It defined 15 years as the minimum age to do safe work, while the age of 18 was stipulated for any job which could, by its nature or environment, affect the health or the safety of the workers. This convention was ratified by most countries that consequently defined the minimum age of admission to any sector of the work force at the level of each nation. [UNICEF, 1997] In the 1980s, the ILO demonstrated, through research and advisory support that the complex problem of child labour can only be successfully combated using a comprehensive plan of action. [Habenich, 1994] In 1992 it started the International Programme on the Elimination of Child Labour (IPEC), which was initially funded and enhanced by the German government. Many other governments joined the Steering Committee meeting held in 1993 and immediately ratified and adopted the programme. [Habenich, 1994] IPEC has been implemented in many countries across the world focusing on the elimination of employment of very young children, child abuse, hazardous work and street children. [Ashagrie, 1997a] Recently the United Nations declared many other recommendations and standards for protecting children from any hazardous activities, abuse or exploitation. The Convention on the Rights of the Child in 1989 [UNICEF, 1997a] and the recommendations of the 1990 World Summit for Children regarding “children in especially difficult circumstances” [Ashagrie, 1997a] reflected the concern of the United Nations about protection of children around the world. In 1997 the so called “new international standards and global solidarity for Eradicating child



exploitation as a matter of paramount urgency” was also declared in the conference of child labour held in Amsterdam. [Ashagrie, 1997a]

## **1.5 Child labour and health**

Children are the most vulnerable group in any population and because of their vulnerability and dependence they can be exploited, ill treated and directed into undesirable channels by unscrupulous elements in the community. [National Institute, 1977][Mehta et al, 1985] This vulnerability becomes quite critical when the children are working. [Banerjee, 1995b] These children are pushed into the workforce at a very tender age because of the poor living conditions of their families or because of the lack of faith in education to assure employment in the future. They often work for long hours in unhygienic condition.

In addition, they are deprived of school education, play recreation, love, care at home and the company of their parents, siblings and friends as well as being subjected to various kinds of occupational hazards. [Mitra, 1993][Parker, 1977]

A huge volume of work has been published, around the world, in the last two decades aiming to call attention to the phenomenon of child labour and to raise concerns about the possible impact of employment on working children. Most of these studies discuss the social consequences, exploitation, and relationship between child labour and schooling, household socio-economic status and poverty. Other studies concern the eradication of the phenomenon.

Very few studies have examined the health impacts of child labour, and most of

these studies aimed to elucidate the possible health hazards for working children compared with adults. [Shah, 1985]

Children frequently work during critical periods of physical growth and psychosocial development. It is the time of puberty and adolescent growth spurts and maturation of personality development. [Shah, 1984] Sitting or standing for long hours in the same position might endanger the health of these children. Long exposure of working children to hard labour, fatigue, inadequate sleep and increase of food requirement during work may increase susceptibility to infection and malnutrition. Moreover, children's presence in the labour force usually deprives them of leisure, play and recreation, which are essential for health and psychosocial growth of children.

Working children thrown into life without passing through the psychosocial stage of puberty and adolescence are often subjected to crippling effects on their emotional development and consequently are more likely to be exposed to delinquency, crime and drug addiction. [Shah, 1984]

The practice of hiring young child workers is known to exist in Jordan despite laws prohibiting children below the age of 16 years from working. [Ministry of Labour, 2000]

The streets of lower-income areas of the major cities and the Palestinian refugee camps are the sites of working children. [UNICEF, 1993a] Some of these children are just 10 or less years old, selling candy and cigarettes, washing vehicles or begging for money and some others are engaged to work as mechanics' helpers or

in the farms helping the family. These children, like many working children in other countries, might be exposed to increased risk of growth impairment, which carries an increased risk of adverse health outcomes in adult life. These effects are expected to be further compounded by low educational attainment associated with working during normal school years.

Owing to the limited data on child labour in Jordan, particularly its health and psychosocial adverse effects, this study, the first empirical survey of its kind in Jordan, was carried out with the intention of identifying the socio-economic background of child labour and its adverse health and psychosocial effects.



## **1.6 Overview of thesis**

This chapter has provided a brief overview of the historical background of child labour, prevalence, underlying reasons for this phenomenon, international and national interventions to control the child labour and health impacts on working children. Chapter 2 presents the aims and objectives of the study. Chapter 3 describes the demographic, socioeconomic, health status in Jordan as well as child abuse including the employment of very young children. Full description of the United Nations Convention on the Rights of the Child (UNCRC) and its implementation in Jordan are also reported in this Chapter. Chapter 4 provides a detailed review of the literature. A description of the methods used to obtain data and achieve the objectives of the study are outlined in Chapter 5. The main findings of the thesis are presented in Chapter 6. In Chapter 7 the results of the study are discussed in relation to the literature.

Chapter 8 summarises the thesis, outlines the limitations and strengths of the study and concludes by providing recommendations and suggesting areas for further research. Each chapter has a brief introduction and summary which attempts to set the chapter in the context of the general framework of the thesis.

## ***Chapter two***

### ***Objectives***

## **2.1 Objective of the study:**

As discussed in the previous chapter, data or official documentation were not available on the health and psychosocial impacts of child labour in Jordan. For this reason and because the practice of hiring children is widespread and an increasing trend, the researcher decided to conduct this study in order to achieve the following objectives:

- 1- To identify and empirically investigate the effect of labour on the growth of working children measured by weight, height, and skinfold thickness.
- 2- To identify and empirically investigate the effect of labour on the packed cell volume of working children.
- 3- To identify and empirically investigate the effect of labour on the peak expiratory flow rate of working children.
- 4- To identify and empirically investigate the effect of labour on the morbidity rate of working children.
- 5- To identify and empirically investigate the effect of labour on the psychosocial status of working children.
- 6- To study the work related variables and how each variable influences the growth status (weight and height) of working children.
- 7- To study the socio-economic variables and how each variable influences the health status of working children.
- 8- To make a contribution to the literature about child labour in Jordan.



## 2.2 Hypotheses

- 1- Child labour has a significant negative effect on the weight of working children.
- 2- Child labour has a significant negative effect on the height of working children.
- 3- Child labour has a significant negative effect on packed cell volume of working children.
- 4- Child labour has a significant negative effect on skinfold thickness of working children.
- 5- Child labour has a significant negative effect on peak expiratory flow rate of working children.
- 6- Child labour has a significant negative effect on the psycho-social status of working children
- 7- The incidence and point prevalence of various health problems (cuts, burns, back and knees pain, and dental caries) is statistically higher in working children than in non-working children coming from similar socio-economic status backgrounds.

## **2.3 Rationale and contribution of the study**

Ensuring survival, development and protection of children will not be easy to achieve and today, it forms a great challenge for all the nations over the entire world.

Development and protection of children is an ethical issue rooted in the culture of Jordanian society. [UNICEF, 1993b] In the 1980s, Jordan took giant strides on the road to diminish the suffering of children and to promote their full development. In the 1990s and after the Gulf war, the country was exposed to enormous economic pressures resulting in several negative trends. One of these negative trends might be the increase of child employment. Child labour as persistent phenomenon in the country appeared also to be growing in the last two decades.

The results of this study will be of interest not only to researchers but also will have important policy implications. In term of its contribution to child labour research, the current work supplements previous studies by providing new insights into the phenomenon in Jordan.

The major element of this research involved the collection and dissemination of comprehensive and up-to-date statistics on working children in the country. Such data assist in identifying the reasons for child labour and determining the magnitude of the problem, informing the public and generating awareness of its health impact specially the growth of working children and in promoting plans to reduce child labour and its health impacts at the national level.

## Chapter two: Objectives

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The availability of detailed and reliable statistics on the issue is particularly important for establishing targets, formulating and implementing interventions and monitoring policies, regulation and programmes aimed not only at the minimisation of the health impacts of child labour in the short term, but most importantly at the eventual elimination of the practice.



***Chapter three***  
***The State of Jordan***

### **3.1 Population:**

Jordan is a small country situated in the Middle East region between latitudes 29 and 33 north and longitudes 34 and 39 east. The total area is about 89.3 thousand sq. km., of which 7.8% is agriculture land. [Central Bank, 2000] The climate in the country is hot and dry in summer and rainy in winter.

Approximately, 5 million people live in Jordan today. [Central Bank, 2000a] More than two thirds of them are concentrated in Amman, Irbid and Zarqa governorates as shown in table 1. [Department of Statistics, 1999]

Most of Jordan's current human development challenges can be traced back to the tension between rising population and limited resources. In 1991 alone, according to the Department of Statistics annual report, Jordan's population increased by 12.6 percent. [UNICEF, 1993b] In addition to its natural growth of 3.4 percent (one of the world's highest), it also absorbed an almost ten percent population increase in the form of the returnees from the Gulf States. [UNICEF, 1993b] The long-term dangers of unchecked population growth have only recently been appreciated in Jordan. The first population estimate in 1952 showed a total population of 587,000. This figure reached 900,000 by 1961 [Department of Statistics, 1986], while in early 1998 Jordan's population was about 5 million (nearly nine times the 1952 figure). [Ministry of Health, 1999] The high population growth rate (3.4 percent a year) might be due to several factors: a high fertility rate (5.6 children per woman), moderate contraception use rate (35% of women), a

social preference for large families and an unstable regional political environment.

[UNICEF, 1993b]

Table 1. Distribution of population by sex and governorates

Govenorate	Male		Female		Total
	No	%	No	%	
Amman	914591	51.5	861830	48.5	1776421
Zarqa	332820	51	317732	49	650552
Irbid	418457	52	384379	48	802836
Balqa	153499	52	143402	48	296901
Maфраq	96499	50	97618	50	194117
Karak	87647	51	84473	49	172120
Tafileh	32411	50	32218	50	64629
Ma'an	42257	52	38438	48	80695
Jarash	69449	51	66816	49	136265
Ajlun	5287	50	53270	50	106146
Aqaba	46170	53	41690	47	87860
Total	2246675	51.4	2121866	48.6	4368541

Source: Department of Statistics. Household expenditure and income survey, Jordan 1999



### **3.2 Economy:**

Jordan is a poor country and its economy is highly vulnerable to external factors. The country is highly dependent on the outside world and particularly on the region's wealthy oil-producers, from which it gets a considerable amount of its foreign currency earnings through trade, workers' remittances or aid. [UNICEF, 1993]

Natural resources such as phosphate and potash and several tourism sites form another source of support in the country

The period between 1988 and 1991 was a difficult time; devaluation of the Jordanian Dinar by 50% in 1988, the Gulf war in 1991 and consequent impact of economic sanctions against Iraq have left Jordan with sharp economic and social pressures. [UNICEF, 1993c]

More than 300,000 people, mostly workers, whose remittances were vital to the economies of the country returned home. In term of cost, the country had lost at least 3 to 4 billion dollars. [UNICEF, 1993c][League of Arab state, 1993]

Reintegrating such large numbers of people into the country while at the same time trying to meet the enlarged demand for health, education and housing, has presented an enormous challenge. The cost of absorbing these returnees has been estimated at more than 3 billion dollars over a three-year period. [UNICEF, 1993c][League of Arab state 1993] Moreover, in the attempt to improve the dire

economic straits, Jordan has adopted policies of structural adjustment, some in cooperation with the International Monetary Fund and the World Bank, to transform from a managed to a market economy. [UNICEF, 1993c] However, this shifting towards privatisation and economic liberalisation has led to a reduction or cutting back of some social programmes and the tendency to charge for what had been free services. The economic hardship accompanying these reforms was especially acute for the poorest sections of the population. During the last 10 years all economic indicators were negatively affected: for example the external and internal debt appeared to be in continues increase and approximately doubled during the period between 1987 and 1999 (Table 2). According to official statistics issued by the Central Bank of Jordan, the Department of Statistics, and the estimates of leading economists, the economic pressure resulted in several negative trends. [UNICEF, 1993c] Table 3 shows that the unemployment rate increased to around 14% of the workforce [Ministry of health, 1999]; families, at or below the poverty line, rose from 18% in 1990 to 22% in 1992; the real per capita income declined from 757 JD (2422\$) in 1985 to 663 JD (947\$) in 1992 [UNICEF, 1993c] and reached 767 JD (1090\$) in 1997). [Department of Statistics. 1999] Although Jordan, with the co-operation of International Monetary Fund and the World Bank, has adopted policies of structural adjustment, the resulting economic upturn remains vulnerable to regional and international factors beyond Jordan's control. The country remains in a critical economic condition (see table 2) and the community is in urgent need of sustained assistance



in basic needs such as food, clothes, shelter, education, water supply and health care. [UNICEF, 1993c][Central Bank, 1991]

Table 2. Selected economic indicators, 1987 - 1999

Indicators (in million JD)	1987	1988	1989	1990	1991	1999
Average exchange rate per US\$	3.0	2.7	1.7	1.7	1.7	1.7
Foreign aid to the government	86	110.3	185.7	116.7	170.3	141
External debt		3837	5409	6053	5517	5186
Internal debt	624.4	921.8	995.0	1038	1062	1338
Export	248.8	324.8	534.1	612.3	598.6	1299
Import	915.5	1023	1230	1726	1711	2623
Payment of foreign debt	207.6	358.1	22.9	179.2	211.6	550.0

Source: Central Bank of Jordan, Annual Report, 1991 and 1999(Central Bank, 2000b)

Table 3. Selected social indicators, 1980 - 1999

Indicators	1980	1985	1990	1992	1997	1999
Adult literacy rate	68.0	75.0	74.2	-	-	87.6
% population below poverty level	15	15.5	18	22.0	-	-
Unemployment rate	3.5	6.0	18.6	25.0	-	14.4
Per capita income/year[JD]		757	497	662.8	767.2	-

Source: National Centre for Educational Research and Development, 1991 and Health Ministry, 1999



### **3.3 Health in Jordan:**

Over the past three decades, Jordan has made impressive progress in the field of health services. In health issues, as in most other fields, Jordan today is characterised by a combination of economic and demographic challenges.

The greatest source of pressure on the health system in general, and on child health in particular, was the sharp rise in the number of people seeking government services, most of which are offered free of charge.

Statistics from the Government and from the United Nations Relief and Work Agency for Palestine Refugees (UNRWA) indicated that the demand for health centre and hospital services has increased by at least 50 percent in most areas, and by over 100 percent in many areas. The year 1993, however, was a turning point of sorts, especially for the children of Jordan - a year of renewed economic vigour and a heightened focus on children as the measure of national development promised to counter-balance the negative consequences of recent economic pressures and the after-shocks of the Gulf war.

In the few years after 1993, Jordan has partially vanquished most of these challenges by a collective effort of the governmental, non-governmental organisations (NGOs), the private sector and international partners.

Jordan has also quickly reaffirmed its political commitment to the needs of children as a national priority. A National Conference for Children was held in May 1992 and followed up by a series of sectoral working groups that formulated specific

strategies and targets. Plans were also established for an effective body with the authority and capabilities required to monitor and follow up child-related issues on a long-term basis. Following on the global goals of the World Summit for Children held in 1990 in New York and the Jordanian National conference, Jordan has prepared a National Programme of Action for the Survival, Protection and Development of Children, covering the period 1993-2000. [UNICEF, 1993c] The Government and UNRWA, the main two providers of health services, started immediately to add enough new facilities, staff and supplies to keep up with demand for hospital beds, maternal and child health (M.C.H) services and drugs. Consequently, the quality of health services was dramatically improved and most of the needs in health services can be satisfied in the majority of areas. (table 4,5, 6)

Table 4. Health centres provided by the Ministry of Health during the period 1995 and 1999

Type	1995	1996	1997	1998	1999
Comprehensive health centres	36	41	42	42	46
Primary health centre	319	323	326	327	355
Peripheral health centres*	265	274	274	277	266
MCH	287	307	316	322	337
Dental clinics	166	188	203	212	226
Chest diseases centres	11	11	11	11	11

Source: Ministry of Health. Jordan, 1999

\*Some of these health centres were upgraded and became as primary or comprehensive health centres in 1999 [Ministry of Health, 1999]

Table 5. Hospitals and beds in Jordan

Year Sector	1998		1999	
	No. of hospitals	No. of beds	No. of hospitals	No. of beds
Ministry of Health	22	3192	23	3222
Royal medical services	10	1828	10	1761
Jordan university	1	494	1	508
Private	50	3051	50	3168
Total	83	8565	84	8659

Source: Ministry of Health. Jordan, 1999



Table 6. Health personnel by selected category and health sectors in Jordan, 1991 and 1999

<div>Year</div> <div>Category</div>	1991	Rate/10.000 of population	1999	Rate/10.000 of population
Physicians	6665	16.6	9686	19.8
Dentists	1477	3.69	2710	5.5
Pharmacists	2220	5.55	3826	7.8
Staff Nurses	2753	6.9	6249	12.8
Midwives	625	1.56	1096	2.2
Practical Nurse	-	-	1904	3.9
Assistant Nurse	-	-	5429	11.1

Sources: Ministry of Health. Jordan , 1991, 65; Ministry of Health. Jordan, 1999

### 3.4 Children in Jordan:

Most of the population in Jordan are young people, children less than 15 years old comprised 2.12 million (42.4%) in 1995, with a further 1.5 million (31.4%) were between 15 and 29 years. [State of Jordan's Children, 1997]

These figures have changed little since 1995. Estimates for 1999 [Jordan, 2001] showed that most of population is in the young age group as shown in table 7. Approximately two third of the population (66.33%) are less than 30 years of age and more than half of them (37.23%) are between 0 and 14 years (table 7)

Table. 7 Age structure of population in Jordan 1999

Age group	Male		Female		Total	
	Count	%	Count	%	Count	%
0 – 14	980.345	51.1	938.081	48.9	1.918.426	37.35
15 – 29	774.487	51.7	723.554	48.3	1.498.041	29.10
30 – 64	810.758	51.8	754.411	48.2	1.565.169	30.34
> 64	84.815	49.4	86.927	50.6	171.741	3.33
Total	2.650.405	51.4	2.502.572	48.6	5.153.377	100

### **3.4.1-Infant mortality rate**

In 1960 one out of every five of the world's children died before the age of five. Since then this figure has dropped by almost half, but still remains too high. In 1991, forty thousand children at least died every day before the age of 5 years. The majority of them died from diseases that can be cheaply or easily cured, such as diarrhoea and acute respiratory infections, or from diseases that could have been prevented simply through vaccination. [Khoury, 1992] Behind these needless deaths are a number of other underlying and interrelated causes such as malnutrition, illiteracy, ignorance of basic hygiene, lack of access to water and sanitation.

Over the past three decades, Jordan has made impressive progress in the reduction of child mortality. In 1960, 111 per thousand infants died before reaching one year of age. By 1990 this was fallen to 45 [National Centre, 1991] and by the year 1999 the figure had been further reduced to 28. [Ministry of Health, 1999]

### **3.4.2 Immunisation status**

To vaccinate at least 80% of all children under the age of one against the six childhood killer diseases by the year 1990 was the goal of WHO. [Khoury, 1992] In Jordan, this target of universal child immunisation was achieved by the year 1988. [UNICEF, 1993d] In 1991, 98% of children below the first year of age received the complete course of DPT and polio vaccinations, 90% were immunised



against measles (table 7). [Ministry of Health, 1999] These high rates were achieved throughout the country without disparities among different population groups.

Therefore, it was all the more disturbing when Jordan suddenly suffered a polio epidemic of over 30 cases in late 1991, after three years in which no polio cases were reported. [UNICEF, 1993d] Ministry of Health officials explained that this was to be expected as long as two factors pertained: there remained pockets of people in the country with lower immunisation coverage, and Jordan continued to be susceptible to large population movements from neighbouring countries with lower immunisation rates.

The Government immediately embarked on a comprehensive drive to vaccinate every Jordanian child under the age of five and the epidemic was quickly controlled. [UNICEF, 1993d]

In 1995, when the Hepatitis vaccine (HBV3) was introduced in the Expanded Programme of Vaccination (EPI), 36% of the target children were vaccinated. By 1999, 85% of children received the complete course of DPT and polio vaccinations; 83% and 78% were immunised against measles and hepatitis respectively. [Ministry of Health, 1999]

It is noted that the immunisation rate dropped in recent years. This might be due to the relaxation of the Expanded Program of Immunisation in Jordan after achieving high rates of herd immunity, which usually requires vaccinating only 80-90% of the community. [Fine, 1993]

Table 8. Immunization coverage % of infant by one year during 1988 and 1999

<div>Immunisation</div> <div>Year</div>	DPT %	OPV %	Measles %	HBV %
1988	90	90	85	-
1992	97	97	91	-
1995	100	99	92	36
1996	100	100	98	100
1997	99	98	96	90
1998	91	91	86	83
1999	85	85	83	78

Source: Ministry of Health 1999

**3.4.3 Diarrhoeal diseases control:**

Diarrhoeal diseases were one of the leading causes of death among children in developing countries. [UNICEF, 1993] These diseases have behind them a multitude of underlying causes. Many such diseases are waterborne and contamination of water supply is one way that children are exposed. Poor hygiene and early or improper weaning practices, which lead to malnourishment, particularly in areas where the water supply is unsafe also contribute to diarrhoeal infection. Diarrhoea can be prevented through a number of measures. Studies have shown that improving the quality and availability of water has a direct effect on



reducing the incidence of diarrhoeal disease and thereby lowers the number of diarrhoeal-related deaths. [UNICEF, 1993] Ensuring adequate nutrition for children is another way to cut down on the high incidence of diarrhoeal disease. One of the best ways of doing this for young children is to encourage breast-feeding which, apart from being highly nutritious and helpful in pregnancy spacing, does not carry with it the risk of contamination.

Jordanian children today have fewer bouts of diarrhoea than children did 15 years ago. The morbidity rate dropped from 1390/10000 in 1985 to 960/10000 in 1999 (table 9). When they do suffer from diarrhoeal diseases, they are more likely to be treated with oral rehydration salts (ORS) or other fluids. Today, almost four out of five children who come down with diarrhoea are given ORS or home-made solution. In 1985, only half were given fluids to treat dehydration, and 40% were given drugs which have been shown to be ineffective against the root causes of diarrhoea; however, their importation is now strictly controlled by the Ministry of Health, while some private doctors still prescribe such drugs. [UNICEF, 1993d]

In 1985, diarrhoea was also a leading killer of Jordanian children, accounting for 11 percent of infant deaths, (table 10) while in 1999, no deaths due to diarrhoea among children under 5 years of age were reported by the Ministry of Health. (table 9) [Department of Infectious Diseases, 2000]



Table 9. Under-five diarrhea morbidity and mortality rates

Year	Number of cases	Number of deaths	Population (<5 years)	Death rate per 10000 cases	Morbidity rate per 10000 cases
1982	29692	195	390437	66	760
1985	60542	101	433132	17	1390
1989	67246	44	500515	7	1340
1995	70314	31	636918	4	1100
1998	71542	22	711661	3	1010
1999	70627	0	735857	0	960

Source: Department of Infecious Diseases. Jordan, 2000

### 3.4.4 Acute respiratory infection

Acute respiratory infections (ARI) are one of the major global killers. Now that diarrhoeal diseases and vaccine-preventable childhood diseases have been largely brought under control, acute respiratory infections (ARI) are the top killers of infants, taking at least four million young lives every year. [UNICEF, 1993] Many of these deaths could be avoided through early identification of symptoms and appropriate treatment.

In Jordan, ARI is still the second leading cause of death among children in the first year of life. It accounts for about 18% of all deaths among children in the first year of age (table 10). [Ministry of Health, 1998]

In 1993 Jordan has adopted and implemented the ARI programme suggested by UNICEF. [Ministry of Health, 1994] The program includes national plans of

action for combating ARI and a strategy to improve the management of cases, which includes design of materials for education and the training of health staff. [UNICEF, 1993] Initial success has been achieved and the deaths due to ARI fell from 28% of admissions to 18% in 1998. [Ministry of Health, 1999]

Table 10. Causes of death among Jordanian's children in the 1st year of life. 1998

Cause of death	Number of deathes (%)
Prematurity	900 (20)
ARI	810 (18)
Diarrhoea	495 (11)
Infections	360 (08)
Malnutrition	45 (01)
Others	1890 (42)
Total	4500 (100)

Source: Ministry of Health, 1998

### 3.4.5 Nutrition

Generally speaking, malnutrition is a common problem in the Arab world. It has been estimated that 10 to 30% of children under the age of five are moderately or severely malnourished. [UNICEF, 1993] Malnutrition is not an acute problem in Jordan, but it may be on the rise due to the difficult economic circumstances of the last ten years.



The most recent survey carried out in 1991 by the Ministry of Health and UNICEF on pre-school children, indicates that children in certain sectors of society are at risk of suffering deficiencies of micronutrients due to faulty dietary habits and/or family economic pressures.[Ministry of Health, 1993] The survey found that 16% of Jordanian children were malnourished, and 1.6% were severely malnourished. The health providers in Jordan implemented various strategies and plans to overcome the problem of malnutrition. These strategies and plans were based on the encouragement of breast feeding and health education of mothers in order to enhance good preventive health practices that can be applied at home. [UNICEF, 1993a]

### **3.4.6 Chronic diseases**

Little is known about the exact figures of chronic disease in Jordan. The diseases reported in table 11 are remitting conditions that often present as sub-acute episodes. Jordan has achieved an impressive improvement in the field of chronic disease control. For example, malaria and tuberculosis prevalence decreased approximately by half between the year of 1994 and 2000, while the prevalence of belharsia decreased fivefold in the same period. [Ministry of Health, 2001] This dramatic improvement might be due to strict control and to the decrease of the import of migrant labour from Egypt where the prevalence of such diseases is very high.

The prevalence of positive HIV cases in Jordan is still not a big problem as seen by table 11.



Most of these cases were foreigners or received the virus from blood transfusion or transplantation. [Ministry of Health, 2001]

Table 11. Chronic diseases among population between 1994 and 2000

Prevalence/100000 Disease	1994	1995	1997	1998	1999	2000
Malaria	6	4.6	3	2.8	2.6	2.8
AIDS	2.9	3	3.7	4.1	4.4	5
TB	10	12	8.8	8	7.5	5.9
Belharsia	44	29.8	17.2	16.8	11.6	8.7

Source: Ministry of Health, 2001

### 3.5 Child labour in Jordan

Very little has been done to highlight the actual statistics on the nature, and the extent of child labour in Jordan.

Despite the survey carried out by Abboud [1997], most of the work carried out on the phenomenon has been informal and based on the observation of the surveyors. Abboud in her study reported that the surveys carried out periodically on child labour practice between 1961 and 1994 have underestimated the actual size of the phenomenon. For example, a survey carried out in 1991 on the prevalence of child labour [Dibo, 1999] reported about 3% among boys and less than 1% among girls and these estimates were unlikely to reflect the actual extent of the phenomenon because the surveys did not take into account working children who were engaged

illegally in the informal sectors such as domestic and family enterprises. [Dibo, 1999] An informal survey conducted by Jordan Television found that on average these children spend seven to eight hours on the street, and generate a daily income of one Jordanian Dinar (JD) (1.3 dollar). [UNICEF, 1993a][Abboud, 1997]

A report [Khawaja, 1999], prepared on child labour in Jordan, identified three main reasons for the absence of accurate statistics on the prevalence of child labour: 1- no national survey has been carried out yet on the issue and all the available surveys were carried out in pockets and limited areas, so their results could not be generalised nationally; 2- the absence of a standard definition of child labour; 3- the absence of legislation to control the agricultural sector in Jordan so that the employment of children in this sector is not legally controlled.

According to a study carried in 1993 [Fergany, 1993], and published by the Arab Council for Childhood and Development, 10 million children (3% of the total population of the Arab world) were estimated to be engaged in work in the Arab countries.

The study reported that the prevalence of child labour varied between countries related to the differences in education level and family income. In Jordan, Syria, Iraq, Libya and Lebanon, the prevalence was estimated to be within the average (3% of the total population).

### **3.6 Disabilities in Jordan**

The concerned international organisation estimate that 10% of population in any country are considered handicapped with different degrees according to the definition which has been chosen by those organisations.[Stoll et al, 1994] [Ching, 1993] WHO defines handicap as “the social disadvantage resulting from impairment and/or a disability, entailing a divergence between the individual’s performance and the expected of him by his social group”. Impairment is also defined as “any disturbance to the body’s mental or physical structure of functioning. Disability is a “reduction or loss of functional capacity or activity resulting from impairment”. [Poterson, 1993]

According to the first comprehensive national survey carried out by the Queen Alia Fund (QAF) in Jordan, a total of 18,829 persons were found to be disabled; the highest proportion (31%) of handicapped children were fully or partially paralysed; those with learning difficulties formed about 26%; with hearing and visual impairment were about 11%. The ratio of male to female was about two to one. [National, 1979]

In 1983 the General Statistics Department in Jordan reported that 11,396 were disabled persons [UNICEF, 1990] while in 1989, Ministry of Social Development estimated at least 132,549 were disabled; 32,000 of them were children. [UNICEF, 1994]

Abu Obileh in his study which was carried out on handicapped children registered



at a special education centre in the North of Jordan [Abu Obileh, 1997] stated that consanguinity between parents was strongly associated with the prevalence of disabilities followed by the sex of child, low birth weight, poverty and malnutrition, infections, accidents and wars.

The above results and international comparisons suggest that the figures for Jordan may be an underestimate. The underestimation may result from these studies identifying only severe and moderate cases or because some families tend to keep their handicapped children, especially girls, hidden.

The problem of handicapping conditions in Jordan is considered one of the most important health problems and is the focus of considerable governmental concern. This concern is attributed to the health, social and economic impact of this problem on the individual and society. Government action is essential to support the rights of the disabled and their integration in the society. [Verloove et al, 1994]

Jordan has obliged concerned sectors of government to fulfil their responsibilities by rendering the best services to handicapped people. The governmental sector represented by the Ministry of Health, and Ministry of Social Development, and the local and international Non-Governmental Organisations (NGOs) are the organisations most concerned on the problems of disabled people in Jordan.

In the last few years many centres were founded across the country offering proper care for this special group of children; many of them are day care centres and few are residential care centres. [Ministry of Social, 2001]

### **3.7 Child abuse:**

Child abuse, including sexual abuse, was formerly a taboo subject that is now being discussed in public with more frequency in Jordan. There are no exact figures on the problem, but it is thought to have increased in view of the additional social and economic stresses that poor families have endured in recent years. Jordanians are generally not aware of child abuse issues unless they are brought to their attention in a public manner.

The Ministry of Social Development, police and some hospitals expressed their concerns on the issue and suggested more and better counselling services at schools and community centres to provide better protection for children.

[UNICEF, 1993a]

### **3.8 The UN Convention on the Rights of the Child in Jordan**

Jordan was one of the first countries to ratify the United Nations Convention on the Rights of the Child (UNCRC) in 1991. [UNICEF, 2001] In 1992 a national conference was held and all the national institutions concerned with childhood issues were invited to participate in its activities. [Alamiiddin, 1995] The conference aimed at drawing up a general policy and plan to implement the UNCRC. The main objectives and programmes of the conference were addressed to the field of health, education, environment, culture, information and giving care

to children with special needs. In the field of health, the programme aimed at reducing the infant mortality rate from 37 per 1000 in 1990 to 20 per thousand in the year 2000 and reducing the mortality rate for children below 5 years of age from 47 per thousand in 1990 to 25 per thousand in 2000. In education, the aim was to improve quantitatively and qualitatively the basic education. In the field of environment, the program aimed at providing clean drinking water for all, securing sanitation utilities that cover all areas by the year 2000 and securing as well a clean safe environment for the children of Jordan. In the field of culture and information, the plan concentrated on the optimal use of means for the dissemination of culture and communication, protection of children from the harmful effects of the various mass media, raising the children's awareness in the health, cultural, social, psychological and environmental aspects needed for a better life. Concerning the care for special categories of children , the plan aimed at reducing the disabilities rate by half by the year 2000, by addressing the causes, and raising the rate of coverage of the disabled services in 2000 as well as handling the phenomenon of child labour for those who are below the legal age. [Report, 2001]

According to UNICEF's "Progress of Nations 1995", Jordan has made significant achievements in the area of child development. It rank second in the region in the fields of education (98% of children reach grade 5) and health (very low under 5 mortality and malnutrition rates) and the nation-wide immunisation campaigns have placed Jordan among the top 45 countries in the world to achieve immunisation rates above 90%. [UNICEF, 2001] [Alamiiddin, 1995]



The achievements in the field of health include the reduction of the infant mortality rate to 32 per 1000 in 1997 and the mortality rate of children below 5 years to 25 per 1000. In the field of care granted to the categories of children with special needs, the early detection of disabilities has increased by 48% in 1998. This fact confirms the increase of awareness among the citizens. As to education, the rate of dropout declined from 6% in 1990 to 1.2%. [Report, 2001]

In May of 2000 the United Nation Convention on the Rights of the Child (UNCRC) Committee in Geneva/ Switzerland reviewed the Kingdom's second periodic report related to the implementation of the UNCRC prepared by the NGOs, UNICEF and National Task for Children (NTFC).

The Committee commended Jordan's progress in achieving most of the year 2000 goals laid down in the Plan of Action for Implementing the World Declaration on the Survival Protection and Development of Children in the 1990s.

Jordan's various initiatives in the area of human rights were noted by the Committee. It highlighted Jordan's ratification of major international human rights treaties including the International Labour Organisation (ILO) Conventions. These include convention 138 on the minimum age for admission to employment and convention 182 on the prohibition and immediate action for the elimination of the worst forms of child labour. [Report, 2001]

One of the main outcomes of the implementation of UNCRC was the establishment of the National Task Force for Children (NTFC) in 1995.

The institution aims at consolidating and co-ordinating the efforts exerted in the

various official, private and international sectors, which offer services to the children of Jordan, and are concerned with their wellbeing in order to realise the objectives of the World Declaration of Children's Rights and the Covenant on the Rights of the Arab Child. [Alamiiddin, 1995] The NTFC Board consisted of representatives from both the official and private sectors in addition to other pioneers from the various fields concerned with childhood. The Board provides instructions on how to activate the national policies, update service principles to ensure the protection of children's rights and the fulfilment of their needs and to develop the necessary legislation to achieve these aims. The implementation of its work proceeds through three main strategies: 1. Observe the child's situation within his or her family and local environment, follow-up to what extent the national, Arab and international covenants are implemented to meet the child's needs, to improve the living standard of children; 2. Carry out research and establish a data base which could form a good background for all sectors and individuals interested in submitting research, statistics, training, and proposals aiming to meet the child's needs in various aspects; 3. Consult and discuss with all the organisations, and people working in the field of childhood, in order to join efforts and co-ordinate between all the sectors through the formation of the National Consortium for Childhood (NCFC). The NCFC comprises about 350 members from NGOs, International Organisations, official institutions, working in the various childhood fields and individuals interested and concerned with the children's issues. Committees of experts in the various tasks of children's issues



were formed in order to discuss, manage, develop and implement strategies and plans, which guarantee and protect the rights of the child.

**A- Committee of Legal and Legislative Affairs:** one of the main tasks of this Committee is to develop and improve laws and regulations, which ensure the implementation of the UNCRC and the Arab Charter on childhood.

**B- Committee of Family and Local Community Affairs:** the main task is to raise comprehensive and complete awareness of the family at the local and national level, aiming at upgrading child care and protecting their rights.

**C- Committee of Education Affairs:** the main objective of such Committee is to consult and co-ordinate in the field of the preparation of strategies and implementation of programmes and services that would improve the educational situation of children in Jordan and reduce drop out at different stages of school education.

**D- The Committee of Cultural, Sport and: Recreational Affairs:** it is involved mainly in co-ordination, preparing, planning and implementing of programmes to improve the cultural, sport and recreational situation of children.

**E- The Committee of Health Affairs:** the main objective of the Committee is to offer consultation and co-ordinate in the preparation of policies and programmes, which would improve children's health in Jordan.

**F- The Committee of Environment Affairs:** the main task of the Committee is to consult and co-ordinate in the field of preparing policies and plans and the implementation of programmes and services which would ensure a suitable



environment for the child's growth and development.

**G- The Committee of Protecting the Child's Affairs:** its main objective is to consult and co-ordinate in the preparation of policies and plans and implementing the programmes and services aimed at protecting the child from abuse and violence, child labour, road accidents, home accidents, begging, drugs, and juvenile delinquency.

**H- The Committee For the Care of Children with Special Needs:** its task is concentrated on preparing policies and plans and implementation of programmes and services, which aim at improving, developing and updating the services demanded by those children with special needs such as orphans and children of poor families. [Report, 2001]

One of the most active institutions in the field of child rights is the Children Protection Unit (CPU). It was founded in 1995 and supervised by one of NGO's. The aims of the Unit are: (a) protecting the child from abuse and neglect; (b) rehabilitating the child victim through coordinated efforts at the national level; (c) organising awareness campaigns and supporting social work; (d) proposing the amendment of some provisions of the Jordanian Penal law issued in 1960, and the principles of the Penal trials law relevant to children under the age of 18 years; (e) training the persons working in the legal, health and mental health fields in diagnostic methods; (f) documenting the abuse and neglect cases and handling them. CPU introduced a special unit called The National Centre for Children Protection and Rehabilitation (NCCPR). The unit, with the support of the Ministry

of Social Development, aims at protecting the child from abuse. This Unit is the first of its kind in Jordan, and this indicates clearly the extent of commitment to Child Rights in general and their protection from abuse in particular.[Report, 2001]

The Family Protection Section at the Public Security Directorate (FPSPSD) is another institution, which has an effective participation in the field of child protection. It was introduced in 1997. The Unit is involved in detecting and investigating violence and abuse cases among women and children in Jordan. The Unit has the authority, without the need for parental consent, to look into, investigate and accept the complaints of children exposed to crime, assault, abuse and neglect. [Report, 2001]

The Noor Al-Hussien Foundation (NHF) as one of the NGOs was also involved in the process of child development before and after the implementation of UNCRC in Jordan. The Foundation considered child development a national priority because more than half of the Jordanian population is eighteen years old and younger.

One of the projects of Noor Al-Hussien Foundation was the Institute for Child Health and Development. It was directly involved in child health care.

The Institute for Child Health and Development was founded in 1986 with the support of the Swedish "Save the Children" to raise child health care standards in Jordan by improving growth monitoring, diagnosis and treatment practices. It is the first and only facility to monitor and assess child growth and development.

It conducts primary field research among children, and provides information to



parents and teachers to increase awareness of early signs of childhood diseases and disabilities.

The Institute includes a model Mother and Child Health (MCH) Clinic and also has a Child Development Unit, which provides development assessment and supervision of minor and moderate disabilities through play therapy, and designs programmes to improve the monitoring of physical health, psychological and social needs of children under the age of six. Harvard University's Institute for Social and Economics Policy in the Middle East cited the Institute as a model for its comprehensive approach and described its "psycho-social" services as the best of any country in the region.

Noor Al Hussein Foundation has developed diverse projects and programmes in co-operation with the Ministry of Education such as the Jubilee School, which is an independent co-educational secondary boarding school for scholarship students with special emphasis on the less developed parts of the country. [Alamiiddin, 1995]

The United Nations Children's Fund (UNICEF) is mandated to advocate for the protection of children's rights, to help meet their basic needs and to expand their opportunities to reach full potential. UNICEF is guided in doing this by the provisions and principles of CRC. UNICEF gave immense support to carry out the draft of the Jordanian Law of Children Rights. Moreover it was the first to encourage the Jordan's contribution to the meetings held to discuss protocols dealing with Rights of the Child. As a result of this encouragement, Jordan in



September 2000 signed the two optional protocols adopted by the United Nations General Assembly. One Protocol deals with the sale of children, child prostitution and child pornography. The other protocol is about the involvement of children in armed conflict.

UNICEF in co-operation with the Princess Basma Women's Resource Centre (PBRC) organised a youth forum "Promoting Opportunities for Adolescents in Jordan" September 14-17, 2000 at Theodor Schneller School in Jordan.

On the last day of the workshop approximately 200 youth from all over the country presented their visions and practical ideas for promoting their own participation in shaping the future and the national agenda. UNICEF has organised similar events starting with a Youth Forum in April 1999 and a Future Search Conference in June the same year. This second youth forum aimed to bring together young girls and boys, who through their participation gave UNICEF and its partners a perspective of young people's needs and priorities.[UNICEF, 2001]

### 3.9 Summary

In summary, Jordan is a small country sited in the core of the Arab world. As In common with many countries in the Middle East, Jordan has a world-wide historic and religious significance. Most of its land is desert and the economic status of the country is highly dependent of the amount of its foreign currency earnings through trade, workers' remittances or aid. [UNICEF, 1993] Natural resources such as phosphate and potash and several tourism sites form another source of income in the country.

These sources of income were negatively affected by the Gulf war and the high fertility rate of Jordanians, which left the country with severe economic pressure and reduced the quality of life of most of Jordanians. Consequently, this left the country vulnerable to many growing and dangerous phenomena such as child abuse, addictions and child labour.

On the other hand, Jordan has made impressive progress in the field of child growth and development by ratifying the UNCRC and adopting strategies and policies, which lead to better child protection from abuse and exploitation.

***Chapter four***

***Literature review***



## 4.1 Introduction

Child labour is a major global issue. Extensive surveys, research and conferences have been conducted aiming to highlight the complexity and various aspects of the phenomenon.

To assess the volume of literature related to the issue, a literature search was performed:

**4.1.1 Primary search:** Popline, Medline and Healthstar databases were searched using the following key words: child labour, child labor, child workers, child labour and health, child labor and health, working children, working children and health, child labour and malnutrition, child labor and malnutrition, working children and malnutrition. Five hundred and seventy eight papers were identified of which 456 papers appeared to be matched with the key words. Abstracts of these papers were reviewed and only one hundred and thirty nine seemed to be relevant. These papers were then obtained through the libraries of London University, Birmingham University, Leicester University, University of Warwick and Jordanian Universities. All papers were read and 74 relevant papers were included in the literature review.

**4.1.2 Secondary search:** From the list of references found in the primary search, 63 papers were obtained and identified to be relevant to the study, so the final number included in the study was 137 papers.

The literature is reviewed under the following headings:

***1- Extent and nature of child labour:*** the characteristics of work such as prevalence, age, duration of work, working hours, and type of work, child income.

***2- Child labour and the family socio-economic status:*** associations and relationships of child labour and poverty, family size, and education of parents.

***3- Legislation and child labour:*** the historical development of legislation over the last century and the role of the international and national organisations in relation to child labour.

***4- Child labour and health:*** general health of working children and specific health issues examined by the study such as growth, anaemia, peak expiratory flow rate, morbidity and psychosocial status among working children.

## **4.2 Extent and nature of child labour:**

In the early 19<sup>th</sup> century, there was an extensive use of child labour over the entire world. Children often started to work within their family activities. [Shah, 1985]

This kind of labour has been seen as part of the integral process of the socialisation and training of children for adult responsibilities. [Estrella, 1994]

Today, participation of children in the workforce is on the increase in many parts of the world particularly in the developing countries. [Pinto, 1989]

The rapid growth of the manufacturing sectors [Banerjee, 1995a] and poverty [Damodaran, 1997] may form the common reasons of child labour.

On the one hand, the child is a cheap labourer, obedient and less likely to strike.

[Trattner, 1970] On the other hand, working children were an important resource for significant and early contributions to the household income. [Cain, 1977]

However, the view that children make a significant contribution to the household income encourages many families to have more children. [Mamdani, 1972]

Accurate statistics on the prevalence of child labour are not available. According to estimates of ILO, 100-200 million children less than 15 years were working.

[Habenich, 1994][Pollack et al. 1990] This is thought to be an under-estimate

[Ashagrie, 1997a] since in some countries, many young workers below the age of 15 are not included in the labour force statistics because of the large variety of terms used to describe the notion of childhood and labour. [Shah, 1985]

Children who both work and attend school are usually considered as pupils rather



than workers. Moreover, in most countries child labour is clandestine and hidden. [Habenich, 1994]

Based on statistics provided by 200 countries to ILO on working children between 10 and 14 years old, it was revealed that most of them were found in the developing world; the highest proportion is found in Asia (78%) followed by Africa (17%), Americas (4.7%), Europe (0.3%) and Oceania (0.2%).

The level of labour force participation in 1990 indicated that 22% of children between the age of 10 and 14 in Africa were engaged in economic activity compared to 15.3% in Asia and only 0.3% in Europe and most of them (77%) were engaged in agricultural work. [Ashagrie, 1997b]

Habenicht in 1994 cited that more than 18% of children between the ages of 10 and 14 years in developing countries were working; in certain countries this figure may be as high as 20 to 30 percent. [Habenicht, 1994] India appeared to have the largest number of working children [Pinto, 1989][Banerjee, 1995b][Maheshwari et al, 1986] and most of them are in rural areas. [Naidu and Parasuraman, 1985] Some reports estimated approximately 100 million working children in India. [Gupte, 1987]

Data collected from ten villages in India [Kanbargi and Kulkarni, 1984] showed that 5.3 percent of children between 5 and 9 years of age were economically active. Of them, 19.9 percent were used as unpaid child labour. In other countries such as Turkey [Dogramaci, 1985], about 38% of children are working between the ages of 12 and 14; in Colombia [Challis and Elliman, 1978], 40% of children

under the age of 14 years are working.

In the Philippines, it was estimated that the census of working children from 7 to 16 years ranged between 3 to 8 million, between 23 to 70% of the age group in the population. [Oosterhout, 1988]

Child labour is also a problem in Israel. [Fishman, 1997] There are at least 500 boys aged between 10 and 15 years in Kalandia refugee camp just outside Jerusalem who were economically active; about 50% of those between 12 and 15 years work in Jerusalem even though it is illegal. Children have to cross the roadblocks separating the areas under Palestinian and Israel Authority; one child had done it more than 500 times. Moreover child labour is not only a Palestinian problem. Thousands of Jewish children especially immigrants such as those from Azerbaijan were also economically active and mostly having full time jobs. Some of them were just 8 years old working in the shuk (open-air market) but no statistics are available because it is an illegal activity.

Contrary to common belief, the situation in developed countries is not necessarily ideal. In the United States, approximately 327,000 children are estimated to be working and this figure may be less than half the true figure. [Challis and Elliman, 1978]

Children appear to be involved into a wide range of economic activities. They are engaged in waged labour in agriculture, services, factories, self-employment in street trades and domestic services. Some receive part of their wage in kind and many others are unpaid and work for their families, relatives or friends in the

home or on the land. Some others are engaged in marginal economic activities on the streets and are exposed to drugs, violence, criminal activities and abuse that damage their health, morals, and emotional development. [Heward, 1993]

Large numbers of child labourers start work before 8 years of age. For example, in the carpet industry, they are preferred to adults because of their docility; fast fingers, low cost and they are less demanding. [Rodger and Standing, 1981]

Under the supervision of ILO, four surveys on child labour were carried out in urban and rural areas of Ghana, India, Indonesia, and Senegal during the period of 1992-93. [ILO, 1996a] The surveys intended to collect relevant statistics on the child labour phenomenon. 4000 to 5000 households, both urban and rural, in each of the four countries were selected as the study sample. The results of the survey showed that slightly more than 10% of children between the age of 5 and 15 years were found to be economically active during the twelve months prior to the survey. In Ghana, 80% of working children were engaged in trading activities, about 40% of whom were working for more than 8 hours per day. More than two thirds were unpaid family workers, while the average monthly income of 75% of paid workers was far lower than the national minimum wage.

In India, most children (90%) in the rural areas were engaged within their families in unpaid agricultural activities, while most of children in the urban districts were in trading, services and production related work such as diamond polishing and weaving with earnings lower than the rate in the area.



In Indonesia most working children were also unpaid family workers and the income of those who were paid was less than 1000 Rupiahs per month.

In the urban area, children were mostly engaged in trade and services sectors and were working for an average of 40 hours per week, while in the rural area the majority of children were engaged in the agriculture and trade sectors working an average of 26 hours per week.

In Senegal, about 80% of children were unpaid family workers in the agricultural sector while the other 20% were salaried for less than 40 dollars per month.

The important aspects of the surveys were the large areas of the study, which included rural and urban areas and the effective sample size selected systematically.

This provided the opportunity to generalise the results to all the survey nations and to develop an acceptable and standardised methodology for assisting surveys in each nation included in the study.

On the other hand the prevalence of child labour is likely to be underestimated in the surveys for two reasons. First, children responsible for caring their younger siblings and performing other chores at the level of household while the adults were busy with their daily work were not considered as working children. Second, many of children do not consider themselves economically active if they are not paid for the work.

In Bombay [Mehta et al, 1985], a study carried out by Meenakshi in 1985 on 73 working children revealed that most working children (66%) were less than 15

years of age and the majority started working before 10 years of age.

Although child labour seems to have a social and economic function, there is a failure to give full social recognition to children's work and there is a marked tendency to undervalue child labour economically. Their earnings are consistently lower than those of adults even when the two groups are engaged in the same tasks. [ILO, 1988] The low wages paid to children give employers a competitive advantage not only in the national markets but also abroad.

In the city of Enugu, a study conducted by Asogwa on 400 street hawkers under the age of 15 years and 200 control non-working children with the aim of studying the sociomedical aspects of child labour in Nigeria, showed that the average age of working children was about 12 years, and 33% of them worked more than 7 hours per day. [Asogwa, 1986a]

A study [Maheshwari et al, 1986] on 61 working children in the unorganised sector in Barmer (India) was carried out in 1986 in order to analyse various factors that forced these children to go work, to study the nature and extent of their exploitation and the social background of the problem. The study revealed that most children were engaged in work as early as 6-8 years. The average working hours per day was about 12 hours and more than 45% were working for an average of 14 hours.

Sundari in 1984, interviewed hundred working children under the age of 15 years in Madras (India) in order to study their social and the work related characteristics. [Sundari et al, 1984] The highest proportion (36%) of children was engaged in the

domestic sector. 86% of children were between the ages of 12 and 14 years and the rest were between 8 and 11 years. Most earned very little (less than 150 Rupiah per month) compared to the standard payment in the area.

The majority (86%) worked between 6 and 12 hours per day and some others worked up to 14 hours per day.

Records of 210 working children in Malaysia [WHO, 1987a] revealed that many of them started to work at the age of 7. The average duration of employment was 3 years and most worked for 7 days per week for an average of 10 hours per day.

In a big slum area of Calcutta [Mitra, 1994], a study conducted by Mitra in 1994 on 41 working children between 7 and 14 years old, showed that more than half of boys (52.5%) were 10 or less years old. Most of them (85%) worked for more than 10 hours per day, the majority starting at 8-10 am until 9-11 p.m.

A study carried out in 1994 on 110 working children in 23 carpet weaving factories in Japuir City in India revealed that duration of work ranged between 0.5 and 6.5 years and mostly children were working for more than 10 hours per day without rest time. [Joshi et al, 1994]

Arab countries appear to suffer from a shortage of accurate statistics on the phenomena of child labour. Most of the available figures are estimates based on unsystematic observations.

According to reports and surveys produced and carried out in five Arab countries (Yemen, Lebanon, Syria, Jordan, and West Bank and Gaza Strip) in 1997 child labour practice appeared to be in modest prevalence in all the above mentioned



countries. In Yemen, [Dibo, 1999] working children formed about 10.5% of the total children aged between 10 and 14 years. In Lebanon [Hamdan, 1997] the figure was about 1.8%. In Syria [Ministry of Labour, 1998a] it was about 9.8%. No estimate was reported by the Jordanian survey [Abboud, 1997] because the sample size used in the survey was limited (377 working children) and could not be representative for all the population. Most of working children (60%) are engaged in trade, services, vehicle repair goods and agriculture sector. [Al-Bustany, 2000] In West Bank and Gaza Strip [Rimshaw, 1997], 18,490 working children were estimated between 12 and 16 years in 1997. There was limited information from the reports about working children below the age of 10 years.

Another report from Syria [Hasanein and Meedani, 1999] presented in the regional workshop on child labour between 11 and 13 of October in 1999, estimated 5.9% of children between 10 and 14 years of age were economically active; most of them (65%) were working 7 to 10 hours per day and 31% were working more than 10 hours per day. The reports stated that child labour in all Arab countries was widely practised in the low-income groups of population. In urban areas working children were mostly engaged in mechanical works such as car mechanics, market or street vendors, in construction, in factories, in repair business and in restaurants. In rural areas, agricultural, domestic, and artisan work were the main activities of working children.

The above mentioned reports stated that the extent of child labour practice was underestimated and the actual figures of child labour prevalence in these countries

were beyond the reported figures. This might be due to the fact that these reports were based on the prevalence of dropout of children from schools and did not include part-time child labourers who work after the school time. The reports did not also include those children who work in invisible activities such as domestic work within the family households.

A report issued in 1998 on the phenomenon of child labour in the Arab world [Ramzy, 1998] revealed that Egypt appeared to be the only country in the Arab world which has a relatively accurate census on child labour. It was revealed that working children were about 1.4 million in 1988; 60% of them were between 12 and 14 years old and 40% were between 6 and 11 years. Most of them (77%) were engaged in the agriculture sector.

In Morocco the prevalence of child labour was about 15.1% of all children. Most of them were working for 60 to 72 hours per week even though the ceiling working hours were 48 hours per week for adults

Theoretically, prosperity and active laws in the developed countries should play a determinate role in the eradication of the phenomenon of child labour, but in practice this does not happen and many of these countries are still experiencing growth in the number of working children. For example, surveys carried out by the Low Pay Unit on school age children in London, Luton and Bedfordshire in 1983 and 85 revealed that more than 40% of children were engaged in a job. Most of them (80%) appeared to work illegally either because of under-age, long working hours or hazardous job. The London survey also showed that 10% of

working boys had been injured at work, while 7% of girls had consulted the doctor as a result of their injuries at the workplace. [Pond and Searle, 1990]

Another survey conducted on 1827 school children in 13 schools in the Birmingham area of the UK revealed that 43% of children surveyed were economically active other than baby-sitting, running errands, and other unregulated employment. [Pond and Searle, 1990] The survey also showed that average payment per working hour was about 1.8 pound (with range of 7p and 8.33 pound) excluding children who worked for free.

The most commonly practised jobs were newspaper delivery, shop work, cleaning and factory work (31%, 18%, 9% respectively).

There were about 273 cases reported by the survey as accidents at work resulting in many forms of injuries, such as cuts, abrasions, fractures, and burns. The highest rate of injury occurred in the agriculture and manufacturing sectors.

In summary child labour is an old issue all over the world. The parents send their children to work in order to increase their income since most of them are living in critical economic status. Most of children start work at a very tender age and some of them are aged only 6 years or less. They are usually working for long hours; some of them spend more than 18 hours per day and earn very little money or some times are working for nothing.

Accurate statistics on child labour are not available because working children often are engaged in invisible and illegal activities. Developing countries are the most affected by this phenomenon. Asia includes the highest proportion of child



labour around the world followed by Africa and South America.

Arab countries including Jordan are suffering shortage of statistics on the issue and the available figures are estimates based on observation. This might be due to the fact that child labour is an abusive practice requiring intervention. Consequently any official statistics on the phenomenon might be raised as an embarrassing issue for the local governments since most of them adopted the UNCRC and ratified most of the ILO Conventions against child labour.

Prosperity appears to have been insufficient to prevent child labour in developed countries. The phenomenon appears to be growing in these countries. Huge numbers of children are working as part time workers; most of them work in very bad condition, for long hours, for very low wages.

### **4.3 Child labour and household characteristics:**

Most research available on child labour discussed in detail, and provided useful descriptions of, the household characteristics of working children. The economic status, family size and education within the household seem to play an important role in the incidence of the phenomenon.

#### **4.3.1 Child labour and economic status**

Children work for a variety of reasons. Many authors state that child labour is rooted where households are suffering of low income, poor living conditions, high unemployment rate and insufficient opportunities for education. [Blanchard, 1983]

Poverty emerges as the most compelling reason why children work. Poor households need money to ensure survival and children are the only means within their choice and capacity to do that. Children work even though they are not well paid because they still serve as major contributors to family income in many parts of the world.

The developing world is the most affected by child labour. It might be due to the fact that most of its countries have been subjected to poverty through maladministration during and after colonialism, in addition to the suffering of wars, drought and floods. National economic hardship often results in forcing young children into the labour market. Children have to work to supplement their parents' incomes and maintain the standard of living of households in areas where the

inflation is ever rising. [Matoka, 1994].

In India, for example, the most significant determinants of child labour appeared to be poverty and illiteracy. [Pinto, 1989][Sharma, 1979] Parents considered that their child's work is very important for supplementing the household income; in some cases it amounted to more than one third of the total household income, while in a few cases children's earnings represented the only income. [Kerpelman, 1996]

According to reports in 13 African countries, 37.5% of boys and 25% of girls in the age between 10 and 14 years were working. The rate of child labour appeared to be higher in the countries where the per capita income was lower. This tends to confirm the link between poverty and child labour. [ILO, 1996b]

The surveys [ILO, 1996a] carried out in urban and rural areas of Ghana, India, Indonesia, and Senegal during the period of 1992-93, revealed that most of the study areas appeared to be poorly developed. About 80% of households in Ghana still used charcoal or firewood for cooking. In Senegal, in addition to the very low level of equipment available in the households, the most common means of lighting was kerosene. Water was supplied mostly by means of privately owned water taps. In these areas, more than 60% of working children stated that poverty was the reason for working and their contribution was considered essential to maintain the living standard of the household, since, in some cases, they contributed more than one third of the household income. Analysis of secondary data showed a correlation between poverty and the likelihood of working children and the



proportion of child workers was much higher among the poorer households.

A study conducted in 1995 in Aligrah city in India [Laskar, 1995] showed that most working children in the lock industries were forced to join the workforce due to economic reasons and for some households mere survival depended on the wages of their children. They had very poor socio-economic backgrounds and generally lived below the poverty line. They were living in small rooms or sheds that were often overcrowded with very poor lighting, ventilation and unhygienic conditions. Some families used part of their rooms/sheds for working purposes.

The study of Asogwa in 1986 also highlighted the fact that child labour is related to poverty. It showed that 72% of the fathers of working children belonged to the low social class compared to only 6% among fathers of non-working children. 15% of children had lost their fathers. [Asogwa, 1986a] In this situation, the child is considered as a very important source of economic assistance to the family, and his earnings are essential for the sustenance of the growing family.

Banerjee's study in 1991 showed that more than 70% of working children of the study area in Calcutta belonged to very low-income families. 30% of them were orphans (death of fathers) or the fathers were either ill or unemployed. [Banerjee, 1991a]

In another study, Banerjee reported that the backwardness of the economy caused by the urbanisation of the country resulted in aggravation of poverty among the Indian families and consequently added new cases to the pool of child labour. [Banerjee, 1991b]

Dipendra in 1992 attempted to examine the causes and the consequences of child labour in the districts of different states of India. [Das and Vemuril, 1992] It was found that child labourers were more frequent in the areas where the socio-economic status is backward. Unemployment, irregular employment and low wages of the adults appeared to be the characteristics of these areas. Therefore, the parents found themselves compelled to send their children to work so as to enhance their family income. People become trapped in a vicious cycle where unemployment lead to more child labour and child labour further aggravates unemployment.

Mitra in 1994 revealed in his study that the critical economic status was the most common reason of child labour. The study showed that half the working children in a slum area of Calcutta have left school and joined the labour market for financial reasons. The others did not give any reason. [Mitra, 1994]

A study in Turkey [Kahveci et al, 1996] conducted in 1996 on the shoeshine boys of Izmir, showed that 75% of them were less than 10 years. Generally they were a part of the wave of migration from the rural areas and the more recent their arrival the poorer they were. Their home conditions varied but were never good.

The highest proportion (68%) was working to earn bread money or to pay school expenses. The contribution of 63% of them ranged between 30 and 100% of the household income. [Kahveci et al, 1996]

In the United States of America [Pollack et al, 1990], the phenomena of child labour is a problem even today.

The poverty also appeared to be the most compelling reason for the phenomenon. There are more children who live below the poverty line in US today compared with 20 years ago. The financial need in 20% of them constitutes a compelling reason to seek employment. Moreover, poverty in the central America, the Caribbean, and Southeast Asia have led increasing numbers of immigrants to enter the US. These immigrants, in particular the children, are highly vulnerable to exploitation in the workplace because of their overwhelming need for income.

In Arab world [Ramzy, 1999], poverty forms the overriding cause for child labour. Families suffering of critical economical status are mostly obliged to send their children to work. The Gulf crisis, wars in Lebanon and Yemen, the unsettled Arab-Israel conflict and the economic sanctions against some countries left the region with severe economic pressures which pulled down the economic status of most families in the Arab countries.

In a preliminary survey of income substitution and basic education [Mustafa, 1996] it was stated that prevalence of child labour is widely affected by the economic standard of the population and the five least developed Arab countries (Somalia, Djibouti, Mauritania, Sudan, The Yemen) were most affected by child labour, while it was expected to be least prevalent in the oil rich Arab countries (Saudi Arabia, Bahrain, Qatar, Kuwait, and United Arab Emirates).

In summary, even though child labour has multifaceted reasons poverty appeared the most compelling reason for the phenomenon. It is mostly rooted where the households are suffering of low income. In this case parents found themselves



obliged to send their children to work in order to keep going the family.

Most of the studies carried out in developing and developed countries showed the low socio-economic condition is one of the most influential and powerful determinants of child labour in the areas where the surveys were undertaken. Some of these studies revealed that child labour was practised by 80% of the families who were living under critical condition. The earnings of the child sometimes formed more than one third of the total household income and, for others, it was the exclusive household income.

#### **4.3.2 Family size and child labour:**

Labour supplied by children is considered very essential for the poor families in many parts of the world.

Children start to work as soon as they are able to do so and their contribution to the household income will gradually increase, as they become adults. In these situations, the benefits contributed by children much exceed the costs of feeding and clothing them. This might be one of the motivations for families to have more children.

Some evidence from the Punjab showed that most people there tended to have large families in order to increase their labour force and consequently their income.

[Jomo,1992][Lloyd, 1993] This might be one reason why family planning programmes have failed or are not successfully implemented in many countries where child labour is high.

Studies conducted in Bangladesh and Nepal showed that child labour appears to

play an incentive role for high fertility in households since working children's contributions are considered essential to the household income. [Cain, 1977]

Studies on the topic of child labour indicated that household size is one of the determinants of the occurrence of child labour. Parents in large households mostly are not able to afford the expenses of schooling of all children. Therefore, it is more likely that children will work. [Abusaleh, 1991]

In Senegal, a survey partially financed by UNICEF showed that the household socio-economic context of working children was characterised by high birth rate, as judged by the large size of the households in the survey areas. [Maheshwari et al, 1986] Large families appeared to be the characteristics of most working children. Studies carried out in Nigeria and the Republic of Korea supported the view that working children mostly come from large families.

The mean household size was about 7 in the Nigerian study [WHO, 1987c] and more than 6 members in the Korean study. [WHO, 1987b]

Banerjee in 1993 showed in his study in West Bengal that the large size was a characteristic of working children's households. Sometimes they had more than 15 members. [Banerjee, 1993] In Pakistan, a study carried out on 360 children working in Lahore area demonstrated that large family size was one of the reasons for child labour in Pakistan. However, large families appeared to have inadequate sources of income, therefore children found themselves forced to enter the labour force in order to enhance the delicate economic status of their families. [Ahmed, 1991]

In summary, child labour and family size appear to be interrelated; parents in large households often are not able to keep running the family and afford the expenses of schooling of their children. Therefore, the parents find themselves pushed to send their children to work. The benefits contributed by working children much exceed the costs of feeding and clothing them. This might form a motivation for families to have more children.

Some evidence from studies carried out in developing countries showed that most people there tended to have large families in order to increase their labour force and consequently their income. This is might be one reason why family planning programmes have failed or are not successfully implemented in many countries where child labour is high.

#### **4.3.3 Education and child labour:**

In developing countries, the decision to send children to school or to work is likely to be based on the relative rate of each return. The costs of education are relatively very high for poor households sometimes preventing them from sending their children to school and consequently leading to high rates of child labour. [Addison et al, 1997]

Poverty, illiteracy and child labour appeared to be interrelated. Poverty forces children to leave school at early age and go to work. Poor education, therefore, leads to high rate of unskilled people with low earning potential in the future.

Many studies [Institute, 1985][Kanbarga and Kulkarni, 1986][Dinesh, 1988][ILO,



1988] suggested that the educational level of parents or head of household was directly linked with child labour and schooling of children.

Illiterate or low educated parents may not be aware of the importance of educating their children. Moreover, these parents are more interested to send their children to work rather than to school because their contribution to household income is highly needed, since the illiterate parents are usually unskilled people with low income. Thus, with illiteracy among adults, child labour tends to increase.

Tienda in 1979 also suggested that parents' education level seemed to be an important determinant of child labour. Illiterate or low educated parents encourage children to leave school to send them to work where they can learn skills and gain experience for the future, while educated parents encourage their children to continue their education because they understand the importance of school from their own experience. [Tienda, 1991]

On the other hand, many children seek employment because the school education is not accessible or affordable.

For example, in 1991 a study suggested that the high prevalence of child labour practice in India was because more than 80 million of children were out of school. [Myron, 1991]

A study from Nigeria showed that most working children stopped their education and joined the labour market; 64% of children in the study dropped out from school before completing their primary education. [Sundari et al, 1984]

According to the results of the surveys in Ghana, India, Senegal, and Indonesia, it

appears that in addition to poverty, poor accessibility of schools and illiteracy within the households were characteristics of the study areas, and thus might lead to more child labour. [ILO, 1996a]

In Ghana, the survey revealed that more than half the members in the households of working children were illiterate and a quarter of working children aged between 6 and 14 years dropped out from school and engaged in various activities.

The Indian survey showed that more than 25% of working males and 40% of working females were completely illiterate. The illiteracy rate among the heads of households was about 50% in the latter survey. High rate of illiteracy appears to be a characteristic of working children's parents in many parts in India. [Banerjee, 1991b][Kerpelman, 1996] For example, a study from suburban Calcutta showed that the parents (83% of fathers and 94% of mothers) were mostly illiterate. [Banerjee, 1991a]

In summary, poor education among parents and child labour appear to be interrelated. Parents with low education or illiterate are often not aware of importance of educating their children and more interested to send them to work as soon as they can. Therefore, children are more likely to drop out from school without enough education and become engaged in the labour force. More educated parents often encourage their children to go to school because they are more aware about the importance of education for their future.

Studies carried out on the issue showed that most of children in some of developing countries drop out of school before completing primary education.

The reason was because some people have no faith in education to ensure work in the future and others consider the benefit obtained from the child labour is greater than sending the children to schools.



#### **4.4The impact of globalisation and transnational corporations on child labour prevalence**

It is uncertain what the impact of globalisation and trade liberalisation has been on child labour. There is reason to fear that children may be among the principal victims of this process. As firms and countries attempt to cut production costs in export industries, they may be tempted to employ children to acquire or maintain a competitive advantage in the world markets. Such fears have fuelled calls for a social clause in international trade agreements and this has become a contentious issue in international trade negotiations. Much attention has been given by developed countries to the possibility of using negative economic incentives to discourage child labour in developing countries. [Joint, 2001]

The global marketplace has emerged and companies are increasingly entering the transnational playing field. [Golodner, 2001]

Some of the bigger industries like Nike, Gap, Disney, Arizona, Eddie Bauer, and Gitano have been directly linked to child labour. One of the examples of overseas sweatshops is in Central America where textiles are made. Fifteen-year-old girls, who work in sweatshops, are not allowed to leave until their production quota is filled. If there is a rush order of clothes the girls would start work at 7 am, and cannot leave for as many as 23 hours later. These girls work three times longer than the average American. They are paid about \$0.38-\$0.58 an hour.

Kathy Lee's brand of clothes are made in sweatshops, where the conditions are

poor. Thirteen-year-old girls were forced, along with everyone else, to work long hours usually from 7:30 in the morning to 9 at night. [McCarter et al, 2001] [Sanders, 2001]

If you go to a shop to buy your child a new soccer ball, there is a good possibility that the ball has been made by someone under the age of 6 years. About half of the world's soccer ball are made in Pakistan and each one of them passes through a process of production where child labour is involved.

Some transnational corporations make their produce in countries in the developing phase, which have very cheap labour, no means of appeal against human rights abuses and no union movement. In doing this, they have made greater profit margins at the cost of mere cents to its workers. So their success story is not based on their good name and advertising alone but also to cheap child labour. [Nike, 2001]

Some transnational corporations, rather than launching their production directly in to the developing country, subcontract it to a local firm. When doing this, the local firms aim to minimise cost and earn the highest amount of profit thus involving themselves in illegal practices such as child labour. [Nike, 2001]

One of the examples of this phenomenon is Nike. It tends to base its production in places labour is cheap or bonded or in places where it can easily get away with illegal labour practices such as Vietnam, China, Indonesia, Pakistan, Bangladesh and India. Nike has never made shoes in the United States. Its first factories, built in the 1960s were in Japan, when that country was still in transition, and for the

last thirty years it has migrated from nation to nation arriving as countries install the necessary mechanisms for orderly business operations and leaving as living standards become too high to make manufacturing profitable. It went to Pakistan, having full knowledge of the favourable conditions prevailing in terms of child labour and has taken no measures to prevent the use of child labour in the production of its soccer balls.

It simply bases its operations on finding the lowest-cost labour to make its products. Twelve-year-old girls work in Indonesian sweatshops 70 hours a week making Nike shoes in unhealthy plants [Nike, 2001].

At the multinational level, the many huge corporations, most of them based in industrial countries that use cheap child labour along the chain of production have only recently come under scrutiny.

Levi Strauss, a major garment manufacturer with production facilities in many developing countries, was looking ahead. In the 1980s, it became one of the first multinationals to address the question of social responsibility overseas, drawing up terms of engagement for business partners covering environmental, ethical, health and safety standards with clauses that bar trade with companies employing children under age 14 or below the age of compulsory schooling. Other multinationals have also developed strategies to improve employment practices at the local level. in some cases asserting the right to cancel, without compensation consignments in which child labour has been used [UNICEF, 1997] [Golodner, 2001][Sanders, 2001]



In summary, globalisation and transnational corporations play a determinant role in the increase of child labour practice seeking for cheap labour to reduce production costs. This certainly offers them the opportunity to keep competitive advantage in the international market. These companies found in the employment of young children a way to achieve this objective since children are cheap and more obedient. Reports from developing countries showed that some of these companies tended to employ children for little money; they have to start their activities at 7.30 in the morning and work for more than 13 hours per day. In the last years the developed countries have made some efforts to discourage the child labour by using negative economic incentive on those companies involved in such practice. These efforts have not always had the desired result since some companies continue to product goods under the name of local subcontractors.

Some people do not see the international spread of these companies as a negative phenomenon since they provide opportunities to increase the income of poor families by recruiting their children. Some others see it as a form of child abuse since these children are usually working in unhealthy environments which endanger their health and psychosocial development.

## **4.5 Child labour and legislation**

### **4.5.1 Child labour and international organisations**

Child labour legislation has been one of the most important issues addressed by the international community over time.

During the last century, ILO was the leading organisation in this field. It has been studying the phenomenon aiming not only at protecting working children but also at putting an end to child labour globally.

For such purposes, 27 Conventions and 14 Recommendations relevant to child labour and its regulation were formulated over the years since 1919. Among these, 11 Conventions and 5 Recommendations deal primarily with the issue of minimum age for employment. [WHO, 1987d]

Minimum Age (Industry) Convention No 5. in 1919 was the first ILO effort translated in practice to regulate the employment of children. [Ashagrie, 1997]

The Convention defined 14 years as a minimum age for the employment in industry. The convention was widely accepted at that time, even if it didn't cover all sectors of employment. The convention was revised in 1921 and again in 1973.

In 1930, ILO Forced Labour Convention No. 29 was formulated. [UNICEF, 1997a] It prohibited any compulsory labour where workers were engaged under penalty.

In 1996 the number of States which ratified the Convention increased to 139. In 1966, International Covenant on Civil and Political Rights was declared and

adopted by the UN. Article 8 states that “no one should be kept in slavery or servitude or be required to perform forced or compulsory labour”. [UNICEF, 1997a]

It was ratified by 135 states as of mid September 1996. Another Covenant on Economic, Social and Cultural Rights was also adopted by the UN in 1966 and ratified by 135 countries by the year 1996. Article 10 [UNICEF, 1997a] states that countries should protect young people from economic exploitation and from employment in work harmful to their morals, their health or their lives or likely to hamper their normal development. It also requires the States to set age limits below which paid employment of child labour should be prohibited and punishable by law.

Convention No. 38 [UNICEF, 1997a], launched by ILO in 1973, defined the minimum age as 15 years to practice safe work, thus ensuring that children cannot be employed before the completion of the compulsory schooling. The age of 18 years was stipulated for any job, which could, by its nature or environment, affect the health, safety or morals of the workers. Only 49 States had ratified this Convention by the year 1996.

Later on the ILO introduced a new recommendation “Minimum Age Recommendation No. 146” which raises the minimum age for employment to 16 years. [Ashagrie, 1997a] Convention No. 138 and recommendation No. 146 are considered to be the most comprehensive international instruments and statements on child labour.



Between 1989 and 1992 the United Nations declared many other recommendations and standards for protecting children from any hazardous activities, abuse or exploitation.

The Convention on the Rights of the Child in 1989 and the recommendations of the 1990 World Summit for Children regarding “children in especially difficult circumstances” reflected the effort and the concern of the United Nations to protect children across the world. [Ashagrie, 1997a] Article 32 ensures the right of children to be protected from work that jeopardizes their health or threatens their education and development. [Ashagrie, 1997a] All State parties are obliged to establish minimum ages for employment and to regulate working conditions; 187 States had ratified the Convention by the year 1996. [Ashagrie, 1997a]

ILO continued its challenge against child labour. It launched the International Program on the Elimination of Child Labour (IPEC) in 1992, [Ashgrie, 1997a] The aim of the programme was to increase the awareness about the extent and impacts of child labour, and to support nations in designing and implementing policies and programmes necessary to deal with the problem of child labour and protection for working children. IPEC has been implemented in many countries across the world focusing on the elimination of employment of very young children, child abuse, hazardous work and street children. [Ashagrie, 1997a]

In 1997 the so called “new international standards and global solidarity for eradicating child exploitation as a matter of paramount urgency” was also declared in the conference on child labour held in Amsterdam. [Ashagrie, 1997a]

This Convention discusses hazardous child labour aiming to eliminate the most intolerable forms of child labour.

In summary, ILO was, and remains, the leading international organisation aiming to protect working children and at putting an end to the phenomenon of child labour. For such purpose, ILO launched 27 Conventions and 14 Recommendations during the last century. The role of this organisation was expanded to encourage the local governments to adopt these Conventions. Consequently all Conventions were ratified by most countries.

Most of these Conventions are dealing with the issue of the minimum age of employment. Others were launched with the purpose of protecting children from hazardous activities, abuse and exploitation. ILO the IPEC in 1992 aiming at increasing the awareness about the extent and impacts of child labour, helping the nations in designing and implementing policies necessary to eradicate the phenomenon or at least to eliminate the most hazardous forms of the phenomenon.

#### **4.5.2 The United Nation Convention on the Rights of the Child and child labour elimination**

On November 20, 1989, in a historic action, the United Nation General Assembly adopted a treaty statement labelled “the Convention on the Right of Child”. [Robert and Haggerty 1994]

Ten months later, in September 1990, the Convention came into force and appeared to be one of the most recent additions to a growing international code of human right law. By the end of February 1996, most countries had ratified the Convention. [Parmelee, 1996] Those countries, which pledged themselves to abide by the provisions of the Convention, now have a legally binding obligation to ensure that their domestic law and other relevant administrative arrangements satisfy its requirements. [Black, 1991]

Even though the process of implementing the Convention still remains unsatisfactory, the international treaty for children is beginning to make an impact where changes and improvements continue to accumulate around the world. The influence of the Convention is evident in many parts of the world. Sierra Leone, for example, demobilised child soldiers and increased the age of army recruitment from 15 to 18 years after ratification of the Convention. [UNICEF, 1996a] Major initiatives such as the World Congress against Commercial Sexual Exploitation of Children, held in Stockholm in August 1996 and the international Congress on Child labour, scheduled for October 1997 in Oslo, derive their impetus from the Convention.



Highlighting the problems in this way is an essential first step towards their elimination. [UNICEF, 1997c]

In a positive initiative to involve the media in educating children about their rights, the Asian Summit on Child Right and Media, held in Manila in July 1996, included a wide range of participants in four days of discussions on how to educate, inform and entertain children while also taking their best interests into account. [UNICEF, 1997d]

Regarding child labour and exploitation of children, the United Nations Convention on the Rights of the Child specifically addresses both child labour exploitation and basic education concerns. [Epsten, 1993]

Article 32 of the Convention makes clear:

- 1- States Parties recognise the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.
- 2- States Parties shall take legislative, administrative, social and educational measures to ensure the implementation of this article. To this end, and having regard to the relevant provisions of other international instruments, States Parties shall in particular:
  - a- "Provide for a minimum age or minimum ages for admission to employment.

- b- Provide for appropriate regulation of the hours and conditions of employment.
- c- Provide for appropriate penalties or other sanctions to ensure the effective enforcement of this article”.

Likewise, Article 28 of the Convention speaks of the educational rights of the child in explicit terms:

- 1- States Parties recognise the right of the child to education, and with a view to achieving this right progressively and on the basis of equal opportunity, they shall in particular:

- a- “Make primary education compulsory and available free to all.
- b- Encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child and take appropriate measures such as the introduction of free education and offering financial assistance in case of need
- c- Make higher education accessible to all on the basis of capacity by every appropriate means.
- d- Make education and vocational information and guidance available and accessible to all children.
- e- Take measures to encourage regular attendance at schools and the reduction of dropout rates”.

- 2- States Parties shall take all appropriate measures to ensure that school

- 3- Discipline is administered in a manner consistent with the child's human dignity and in conformity with the present Convention.
- 4- States Parties shall promote and encourage international co-operation in matters relation to education in particular with a view to contributing to the
- 5- Elimination of ignorance and illiteracy throughout the world and facilitating access to scientific and technical knowledge and modern teaching methods.

In this regard, particular account shall be taken of the needs of developing countries. [Epstein, 1993]

Looking at children's work from the point view of the Convention on the Rights of the Child, certainly it offers not only new ways of understanding the problem of child labour but also provides new impetus and direction to the movement against it. The aim must always be the best interests of the child. No child should labour in hazardous and exploitative conditions, just as no child should die from preventable illnesses. Work that endangers children's physical, mental, spiritual, moral or social development must end.

The Convention on the Rights of the Child insists that primary education must be universal and compulsory. Education and child labour interact profoundly. On one hand work can keep children away from school; at the same time poor quality of education often encourages children to drop out of school and start working at an early age. Good quality of education on the other hand, can keep children away from work. The longer and better education the less likelihood that a child will be forced into damaging work. If governments delivered their legal commitment to



this, the extent of exploitative child labour would be significantly reduced.

Children at school also have good opportunities to be taught about which kinds of work are particularly hazardous and advised on how to recognise the tactics of exploitative employers. Moreover they have a chance to be taught general life skills and the rights of labour so that they understand child labour laws and what they mean in practice.

Indeed, it has been argued that in developing world situations, child labour will never be eliminated until universal compulsory education is mandated and implemented, as this is the only effective means of guaranteeing widespread enforcement. [Epstein, 1993]

The Convention on the Rights of the Child explicitly specifies in article 28 that States parties must promote and encourage international co-operation in support of developing countries efforts to ensure access to education for all children. International organisations were moving in the right direction. The World Bank has significantly raised its lending levels for basic education by the end of the last decade. In May 1996 the Development Assistance Committee of the Organisation for Economic Co-operation and development (OECD) committed itself to helping developing countries to reduce absolute poverty by half and to achieve primary education for all by the year 2015 at the least. [UNICEF, 1997e]

At the World Conference on Education for All in 1990, government promised to increase the resources available for education. [UNISCO, 1995]

Many governments started trying to ensure that their children receive high quality

primary education regardless race, gender or economic status. For example in India over 100 districts are implementing a gradual approach to enrolment and retention in primary schools. Communities, officials and teachers focus on enrolling all children aged five and six in grade 1 and increasing retention through improved quality of the classes and joyful learning through grade 6. This is proving to be practical and important strategy for preventing the entry of present and future generations into the cycle of child labour and poverty. After the mid-decade review of progress in achieving education for all held in Amman in 1996, many other countries have increased spending on education. The Republic of Korea, for example, invests \$130 per person per year in basic education; while Malaysia spends about \$128 per person. [UNICEF, 1997e]

Preventing the use of child labour and providing children with basic educational services normally requires a significant degree of institutionalisation of governmental policy, specially in the developing world, where effective implementation of such policy often requires institutional expansion by building more schools in rural areas where compulsory education regulations are ignored or expanding police, judicial, and child welfare services so that, laws aimed at preventing the use of child labour can be more effectively enforced. [Epstein, 1993]

Finally, one cannot divorce the expression of children's rights from their presumed economic consequences. It is widely argued that the extension of educational opportunity enhances economic growth and modernisation.

Child labour abuses, on the other hand, are most likely to occur when short-term economic gain is anticipated. [ILO, 1996b]

In summary, the United Nation is another organisation, which is preoccupied with children issues and their rights. The launch of the Convention on the Rights of Child in 1989 was an historic action. Most countries have ratified the Convention but the process of the implementation remained unsatisfactory.

One of the major issues addressed in the Convention is child labour and its impact. By looking at article 28 and 32 of the Convention it is obvious that the Convention offers not only new ways of understanding the problem of child labour but also provides new impetus and direction to the movement against it.

The UNCRC insists that compulsory primary education and addressing economic difficulties in countries will be the proper way to protect children from abuse, exploitation and keep them away from the child labour market.

Many organisations took major initiatives and moved in the right direction to encourage countries to put the UNCRC into action. The World Bank has raised its lending levels for basic education. The World Congress against Commercial Sexual Exploitation of Children held in Stockholm, 1996, and the Asian Summit on Child Right and Media held in Manila, 1996 were further proof of the high priority given by the international organisations and individual countries to ensure proper development for children away from abuse and exploitation.



### **4.5.3 Child labour legislation and local governments:**

The practice of child labour has a long history in many parts of the world, including the developed countries.

The phenomenon began to be a problem in Europe and America during the industrial revolution due the growing need for large numbers of workers. [Hunter, 1971][Landrigan et al, 1995][Trattner, 1970] At that time, employers preferred to employ children rather than adults because children were cheaper and more tractable.

Children in Scotland (some six year old), especially girls, did work in the mines and mills because their wages were higher than the income of their parents at farms. [Emmeline, 1980] In the mines of Pennsylvania and the mills of Massachusetts and South Carolina, the situation was similar. [Zinn, 1980]

At that time, the community in the United Kingdom started to have a grate concern about the destiny of those children who were exposed to the worst hazards of child labour. In 1821, this preoccupation pushed the authority to formulate the first law (The Health and Morals of Apprentices Act) against the phenomenon.

In 1833, another Act to regulate the labour of children in the mills and factories set the minimum working age of children at 9 years and abolished night work for those under 18 years. [Hunter, 1971][Landrigan et al, 1995][Trattner, 1970]

At the end of the nineteenth century, attention was focused on those children of school age who were also gainfully employed. [Asogwa, 1986]

In the United States, despite various early efforts at Federal and State legislation, child labour continued to be a major problem through the 19th and into the first third of the 20th century. Inadequate enforcement of existing laws contributed to this persistence. The need for new legislation against child labour was identified only after the tragically event of the Triangle Shirtwaist Company in Lower Manhattan in 1911. (See page 4). In 1938, after several unsuccessful attempts to pass federal legislation regulating child labour, the Fair Labor Standards Act for minimum wage, overtime pay, and maintenance of records on wages and hours for employees of all ages was passed. It remains the major Federal legislation governing child labour in the United States today. [Wertheimer, 1977]

Under the Fair Labour Standards Act no child under the age of 16 years may work during school hours and a ceiling is set on the number of hours of employment in any hazardous work. Non-agricultural occupation is prohibited for any child younger than 18 years. Through time, the efforts of the ILO moved many developing countries, especially those gradually undergoing industrialisation, to introduce their legislation and regulations which prohibit the employment of children below a certain age and specify the conditions under which children can legally work. [ILO, 1988] The age and the aim of application of child labour legislation appear to vary across the world.

In the last decade the Arab world was seriously concerned about the growing phenomena of child labour. Most of countries took advanced steps toward the eradication of the phenomena. [Ramzy, 1999] Each of those countries has ratified

most of International Labour Organisation (ILO) and Arab Labour Organisation (ALO) conventions which permit the controlling of child labour practice and putting an end at least to the most exploitative forms. For such purposes, Yemen, Jordan and Lebanon Authorities with the support and collaboration of International Programme on the Elimination of Child Labour (IPEC) formulated strategies and plans of action to control the phenomenon of child labour, to protect working children from hazardous work and encourage the communities to fight the phenomenon. These actions led to modifications and enforcement of the legislation related to child labour. [Ramzy, 1999] In Syria, the law defines 15 years as a minimum age for productive work; Jordan raised the minimum age from 13 to 16 years; in Lebanon the law forbids the employment of children before the age of 16 years; in West Bank the minimum age of employment was raised from 13 to 14 years; in Yemen the minimum age for working children was defined as 15 years for all types of work. By these actions, these countries fixed the minimum age for work to the age limit for compulsory education. For example in Syria, the law obliged parents to send their children to schools between 6 and 12 years; in Jordan the first 10 years of education are compulsory for all children; in Lebanon, the age of 15 years is the adopted age for free compulsory education; in West Bank, compulsory education is extended to grade 10.

The minimum age for employment in Egypt is 12 years while in Philippines it is 14 years and in Hong Kong 15 years. [ILO, 1988] In these countries, one single minimum age is applied in all sectors of activity, while in other countries such as



Brazil, India, and Peru the minimum ages for employment varies according to sectors and activities. In Peru for example the minimum age ranges from 14 to 18 years (14 in agriculture, 15 in industry, 16 in sea fishing and 18 years for work in ports). [ILO, 1988]

Many countries have taken major steps to develop a strong institutional base nationally to combat child labour. These countries have developed specific laws protecting children from exploitation and hazardous labour. For example, Kenya, Hong Kong, Brazil, Peru and Philippines defined 18 years as a minimum age for employment in hazardous work. [ILO, 1988]

Other countries provide a very comprehensive list of occupations considered hazardous and unsafe for children. In India, legislation prohibits employment of children below 14 years in factories, mines or any other hazardous occupation. In 1986, the government took a further step by identifying processes and industries that are hazardous with the view to banning them in the long term. [ILO, 1988]

In the same year the Ministry of Labour launched a programme to combat child labour. This programme proposed “ withdrawal of working children from hazardous industries as a national policy to combat child labour; payment of 100 Rs/ month to their parents; training the children for non-dangerous professions in special centres and nutrition and health programs in these centres for the children”. [Das et al, 1992]

Today the challenge for all countries is to extend the scope of child labour legislation to include the informal sectors where the majority of child workers are

usually employed. To reach this goal some countries have combined child labour legislation with compulsory primary education. [Beqele and Boyden, 1988]

In summary, child labour is a long-standing problem throughout the world. It began to be a problem in Europe and America during the industrial revolution due the growing need for large numbers of workers.

At that time, the communities started to have a great concern about the destiny of those children who were exposed to the worst hazards of child labour. In nineteenth century, this preoccupation pushed the authorities to formulate the first laws to regulate the phenomenon

In the United States, the need for legislation against child labour was identified only in the 20 century when the Fair Labor Standards Act was passed to regulate the minimum wage. Through time and with the support of ILO many of developing countries introduce their legislation and regulations, which prohibit the employment of children below a certain age and specify the conditions under which children can legally work.

Arab countries, included Jordan, have managed a high level of improvement in the field of legislation against the phenomenon of child labour which permit the controlling of child labour practice and putting an end at least to the most exploitative forms. Strategies and plans of action to control the phenomenon of child labour, to protect working children from hazardous works and encourage the communities to fight the phenomenon.

#### **4.5.4 Child labour between law and practice:**

In the past decades many experts thought child labour could be terminated if law prohibited the employment of children. The truth was quite different and child labour continues to exist despite the law. This may in part be because child labour law was not comprehensive enough and its implementation was also inadequate.

ILO carried out analysis of 107 reports on the application of Convention No.138 and Recommendation No.146 concerning minimum age in 1981. [WHO, 1987d]

The results showed that the extent and application of the Convention and Recommendation was extremely poor in most cases.

Laws related to child labour often are not successfully implemented or enforced in many countries. Poverty and scarce resources seem to be the major cause.

In some developing countries child labour appears to be matter of survival, therefore any standard or law related to the phenomenon will be violated as long as the poverty exists. [ILO, 1981][UNICEF, 1997a]

In some areas legislation on child labour has been adopted but never put into practice. Scarce resources often excuse this.

Even though the available capacity to implement or enforce existing laws is not used or underutilised. India, for example, adopted most of the international Conventions and formulated an extensive national policy to combat child labour, but funding and commitment to implementing them are inadequate. [Jeffries and Ransford, 1973]



A common conclusion of child labour studies is that child labour can only be combated or at least reduced by mobilisation of all the forces at the international and local level. This needs a promotion of the community awareness for understanding and effective implementation of existing legislation and creation of public opinion in favour of new progressive legislation. Comprehensive legislation should be implemented to protect the health, safety and welfare of working children. Such legislation should cover working hours, working environment, wages and education. [Begele and Boyden, 1988]

NGOs have a vital role to play both in raising levels of public concern and protecting children. They can monitor the conditions in which children work and help launch the long, indispensable process of changing public attitudes. Their independence allows them to expose abuse or attack vested interests without yielding to political pressure. Some are deeply involved in attempts to free children from the worst dangers of work. In India for example, the South Asian Coalition on Child Servitude works with government officials in raiding sites where children are known to be working in intolerable circumstances. It takes credit for being involved in the release of some 29,000 children since its inception in 1983. [ILO, 1997a]

In summary, the enforcement of laws and the new legislation adopted by most of countries against child labour seemed to be not effective. Child labour continues to exist despite of the law. This is might be due to the fact that child labourers offer an essential support to keep running their families life. Therefore, any standard or law related to the phenomenon will be violated as long as the poverty exists.

#### **4.5.5 Jordan and child labour legislation**

Jordan, as well as most of countries, has ratified most of the international Conventions and Recommendations related to child labour. By the ratification of Conventions Nos. 123 and 124 in 1966, Jordan prohibits the employment of children below 16 years in mines. Children over 16 years should also be healthy and fit to work in mines.

In 1991, Jordan ratified the Convention on the Rights of the Child, which recognises children's right to be protected from work that threatens their health, education or development. In 1997 Jordan also ratified Convention No.138, and by that, Jordan established 16 years (the age necessary to complete the compulsory schooling) as a minimum age for admission to any work. In 1996 Jordan passed the new National Labour Law No. 8 which replaced the law No. 21 previously in action since 1961. The new labour law [Ministry of Labour, 2000] increased the threshold of employment age from 13 to 16 years in Jordan. The new law does not allow the child to leave school before completing basic compulsory education.

Thus, Jordan also satisfies the requirement of the International Convention No. 138 (1973).

The law also prohibits employment of children for more than 6 hours per day and employment in any night work. [Ministry of Labour, 2000]

On the other hand, the law does not define any age threshold for employment in some activities such as government employment, family enterprises, domestic

labour and the agricultural sector. [Ministry of Labour, 2000]

In summary, Jordan has made major strides in the field of legislation against child labour. Even though Jordan ratified most of the international Conventions and implemented new legislation to regulate the phenomenon of child labour the situation remains unsatisfactory and child labour continues to exist despite of conventions and law.



## **4.6 Child labour and health consequences**

Little is still known about the relationship between health and child labour. In the context of child labour, the bulk of literature is devoted to analysing the social and the economic circumstances of the phenomenon.

One of the main reasons for the lack of literature on the subject of child labour and health may be the fact that child labour is clandestine in most of countries and often children are employed in informal sectors where access and contact with them are difficult.

In this section, the major proportion of the literature review is devoted to discussing the available literature related to the health status of working children expressed by specific indicators such as nutritional status, morbidity prevalence and psychosocial status.

### **4.6.1 Nutritional status and morbidity prevalence in the context of child labour**

Children are the most vulnerable group in the population. Their growth and development are influenced by the nutritional intake and the environment. For example, muscles and bones require adequate and balanced nutrition for proper development, while clean air in the environment is important for the lung development. [Bhargava, 1987]

The spurt of growth in children which occurs at puberty when the child usually

work, and the higher physical activity performed by working children require more nutrients to satisfy the requirements for growth during this critical period. [Shah, 1985]

In practice, the situation is quite different and working children often do not receive any additional food to satisfy this new demand because they mostly belong to poor families and their small earnings do not permit them to do so.

Therefore, these working children are at increased risk of stunting and wasting compared their non-working peers. [National Institute of Nutrition, 1984]

Growth in working children may also be influenced by the conditions of work including hours of work performed per day, duration of work and the age when the child starts to work.

Conditions of work can lead to dangerous health hazards. For example children employed in carpet manufacturing breath wool dust which may cause respiratory tract and stomach disorders. [Challis and Elliman, 1978] Noisy occupations, poorly ventilated and dirty working environments, uncomfortable positions during the work, and loading heavy weights increase the morbidity rate among working children. [Banerjee, 1991b]

One of the few studies on the issue was a cohort study carried out in 1986 in Hyderabad. [Satyanarayana et al, 1986] The study population was about 900 boys aged from 1 to 6 years in 1965, from whom, 410 cases aged 5 years and below at the time of registration were studied for a period of 17 years of their life.

According to the deficit in their height for age at the age of 5 years, they were

categorised in normal, moderate and severe malnourished groups.

The occupational status of subjects was categorised into: students, child farmers within their families, waged agriculture workers, and non-agricultural workers. It was demonstrated that height and weight were significantly lower among the workers compared to the students in each of the nutrition groups. Another interesting finding showed that the deficit of height and weight in the group who worked within the family or engaged in the non-agricultural activity was less than that of the group who worked for wages.

This might be explained by the fact that the environment and conditions of work within the family are less exploitative.

Separating out the effect of malnutrition in the pre-school age (before starting to work) gave the author the opportunity to assess the contribution of pre-working nutritional status to the present height and weight of working subjects. But the confounding effect of the socio-economic background of the subjects within the same group of nutritional status was not controlled for and that could lead to selection bias where the students might have better socio-economic status than those who were clustered in the worker group.

Work related variables appear to affect the nutritional status of working children. A comparison study [Singh et al, 1980] conducted on working children (no specification of gender) from the slum districts of Bombay revealed that the height of working children was lower than that of non-working children. Children who started to work before the age of 9 years appeared to be more malnourished than



those who started at the age of 11 years.

Gross et al studied the nutritional status of 89 Jakartan street children aged between 8 and 15 years and compared them with non-working children living in a Jakartan slum and National Centre for Health Statistics (NCHS) reference data [Gross et al, 1996]. Height for age, weights for age and weight for height were used as indices to assess the nutritional status of children.

The study showed that height for age index in 52% of street children was lower than the third centile of the NCHS reference standard, while their weight for height index was close to that of the reference population standard, and only 7% of them were under the 3rd centile.

It is surprising to note that height and weight were better in the street children compared to their socio-economic peers. This could be accepted since the financial resources of the street children are better compared to the latter group who depend only on the income of their parents.

A noteworthy feature of this paper is the study design, which used two comparison groups for the assessment of nutritional status of the street-working children. On the other hand the study appeared to have limited information about the gender and the socio-economic status which could be different within the people living in the same area.

Another case control study [Joshi et al, 1994] was undertaken to study the nutritional status of working boys aged between 6 and 15 years in 23 carpet weaving factories of Japiur city in India. Height, weight, chest circumference,

personal hygiene levels, morbidity pattern and immunisation status were studied in 110 working boys and compared with those of 290 school children of similar age group and from the same area who served as a control group. The study showed significant difference in the health outcome between the two groups of children. Height, weight and chest circumference, controlled by age, were significantly lower in working children compared to that of school children except those of the groups 6-7 and 7-8 years where height and weight were not significantly different. Signs of malnutrition such as pallor, Bitot's spots and regular stomatitis appeared to be quite common and presented in significantly higher numbers of working children compared to school children.

The study also revealed a significantly higher prevalence of backache, lower limb pain, headache and acute respiratory infections among working children compared to the controls. The absence of a significant difference between the height and weight of the two youngest groups of working children and their controls suggests that the longer the duration of work the worse the nutritional status of working children.

However, the study appeared to have some problems in its design by focusing on specific work places. In addition, no attempt was made to adjust for the confounding effect of socio-economic status.

In 1999 the effect of child labour on the growth of children was studied in 223 child labourers aged 8-15 years who were matched by age to an equal number of controls and pair matched for gender. [Ambadedar et al, 1999]

The study revealed that the increase of weight and height among working boys were significantly lower than that of their controls, while the same was not detected for the female subjects. The Body Mass Index (BMI) of both group was lower than the normal value but more child labour (81%) than controls (72%) had BMI less than 18.5.

Many experts believe that child labour is not a bad thing and working children often have more chance to improve their nutritional status, because a part of their earnings could be spent on food.

The health status of 593 female workers under 18 years, employed in 9 factories in the Republic of Korea were studied in 1985.

Data on nutritional status (measured by height, weight, body mass indices and haemoglobin level) and morbidity rate of respiratory, gastrointestinal, and neuromuscular system of working children were compared with data gathered from 109 female children who applied to work in the same factories. The result of the survey showed that child workers under 15 years were taller and heavier than the non-working comparison group, while haemoglobin appeared to be similar in the two groups.

The study also showed that productive cough, dyspnoea, diarrhoea, constipation, anal bleeding, headache, muscle pain, anorexia, myopia, hearing impairment and dizziness were significantly higher in the working group than in the comparison one. The authors suggested that the increased height and weight among working children could be due to better feeding after the employment. [WHO, 1987b] This



conclusion seems to be questionable since the socio-economic status of the two groups could be different. In addition, the study did not describe the previous working status of the comparison group, who might have been workers before applying for a job in the factories.

In 1988, Banerjee studied the health and the socio-economic conditions of 759 males and females children working in different sectors in Calcutta. [Banerjee, 1991a] Malnutrition (assessed by vitamin A deficiency), anaemia and prevalence rate of common infectious diseases, were used as health outcome measures. The study showed that 69.2% of children were malnourished and more than 60% were anaemic. The author suggested that the high prevalence of malnutrition among working children might be caused by the interaction between poverty and child labour.

Upper respiratory tract infection, gastrointestinal disease, skin disease and eye disease were the most common disease with a rate of approximately 37%.

The result of the study appeared to be consistent with the hypothesis of other studies on the issue. However, it is not possible to weigh how much child labour alone contributes to such health impacts, because the design of the study (case series with no controls) and the statistical techniques used in the analysis are inadequate.

A WHO-supported study [Asogwa, 1986b] was conducted on 14 part-time working children (8 boys and 6 girls) engaged in a soap factory in Nigeria aiming to assess the circumstances of their social and health status. 200 (108 boys and 92

girls) primary school children were selected as a control group from the university primary school in Enugu, a town 80 Kms. from the factory.

Haemoglobin level, general appearance (physique), and skin lesions were used as outcome measures. The study showed that the nutritional status (expressed by the level of Hb), physique and skin of the study group was better than that of the control group. The haemoglobin level of all working children was below 70% of the normal value while 46% of children in the control group reach or exceeded 80% of the normal value.

Most working children (79%) had a good appearance, while children in the control group mostly had a very good appearance. Skin lesions were seen in 79% of working children compared to only 28.5 % in the control group.

The fact that working children are less healthy than those of the control group might be attributed to many uncontrolled confounding variables other than child labour. The small sample size of working children and the unadjusted socio-economic status of both groups may be the main determinants of such difference as low socio-economic status is often associated with poor nutritional status and poor awareness of health risks.

Noteworthy studies on the health status of working children have been conducted in a number of developing countries by a group of experts appointed by the WHO.

In Malaysia [Mahathevan R, 1985], the health status of 210 working children (155 boys and 55 girls) aged between 7 and 15 years was studied and compared with that of an equal number of school children of similar age, sex, ethnic group and

socio-economic status. A group of signs and symptoms of common diseases (ascertained by clinical examination) were chosen as outcome measurements of morbidity and nutritional status of both groups in the study. The result demonstrated that working children were suffering more health problems than those in the control group. 38.4% of children in the study group had been hospitalised compared with only 6% in the control group. One third of hospitalisations in the study group were caused by swelling of face and legs, asthma and accidents at work which were not presented in the control group. The study recorded about 703 conditions of injuries related to the work of which 92% were physical injuries. The remaining 8% were poisoning cases.

Also the study showed that 42% of working children were anaemic and 48% were underweight, but no data were reported regarding the control group.

The health status of forty male children aged between 7 and 14 years working in scale\_leather workshops in a slum area in Calcutta [Mitra, 1993] was studied and compared with a control group of 40 non-working children of the same age, same locality and same socio-economic status. Height, weight, and the prevalence of specific signs and symptoms of nutritional deficiency such as Bitot's spot, night blindness, glossitis, angular stomatitis and dental caries were used to assess the nutritional status of children. Symptoms and signs relating to digestive system, respiratory system, cardiovascular system, skeletal system and skin were also used to assess the morbidity prevalence. The results showed no significant difference between the nutritional status of the two groups of study, while the prevalence of



low back and ankle pain, dizziness, and tingling pain in the hands were significantly higher in the working children. The study suggested that the skeletal and nervous system afflictions might be related to their employment in particular activities. For example, continuous working in a sitting position and lack of play could be the cause of the high prevalence of back pain among working children, while neurological consequences may have resulted from the presence of neurotoxic materials in particular jobs such as the cheap glue used in some shoe factories. [Mitra, 1993] The confounding effects of the age and socio-economic status were likely to have been adjusted for by choosing their controls from same age group and similar socio-economic status. On the other hand the study still showed many other limitations such, as insufficient information about the method of adjustment, poor presentation of results and finally the small sample size which may have biased the result and consequently the conclusion.

Between 1989 and 1990, Banerjee conducted a study on 500 children (395 boys and 105 girls) of age group of 7 and 14 years working in the agricultural sector in nine villages of three districts of West Bengal. [Banerjee, 1993] Their nutritional status, morbidity rate of common diseases and health hazards were assessed through a complete physical examination, haemoglobin level, vitamin A and B levels and stool analysis.

According to a classification proposed by the Indian Academy of Pediatrics, most of working children in the study (78% of boys and 89% of girls) were suffering different grades of malnutrition. It was also revealed that 68.5% children were

anaemic; 61% had vitamin B deficiency in the form of angular stomatitis and glossitis; 48% had vitamin A deficiency in the form of night blindness and Bitot's spot; 30% had conjunctivitis or blepharitis; 30% were infested by different form of helminthiasis; and more than 29% were suffering caries, gingivitis and upper respiratory tract problems.

Even in the absence of any process to adjust for confounders, the results of the study are interesting. The high prevalence of malnutrition and other health disorders could not be totally explained by socio-economic background of working children, since the prevalence of malnutrition among the general population in India does not reach the proportion in the study. Therefore, it is possible to conclude that the health impacts could be, at least partially, attributed to the labour performed by children.

A 'walk-through' survey [Feingold et al, 1994] has been carried out to study the socio-economic status and the health status of 45 working children (no information about gender) in 5 outdoor markets in Tel Aviv and Jerusalem. The study reported that more than 42% of children had some physical health problems including paleness, malnutrition appearance, short stature, missing teeth, dental caries, body burns, cuts, and lacerations. The high prevalence of impaired physical health among the working children suggests that working children may be more liable to malnutrition than those who do not work. This impression cannot be substantiated because the study did not adjust for the effect of confounding variables and health measurements were not adequate.

An unpublished Ph.D. thesis carried out by De La Paz in 1991 aimed to study the health impact of child labour [De la Paz, 1991]. One of the major objectives of the study was to determine the effect of child labour and its related variables on the growth, maturation and illness incidence among 113 working boys by comparing them with 109 non-working children of similar ages and from the same area in Philippines. Growth was assessed by height, weight, sitting height, mid upper arm circumference, triceps skinfold thickness and bi-acromial diameter.

Maturation was assessed by X-ray of the wrist. The results demonstrate that working children were shorter by 3.76 cm and lighter by 2.2 kg than non-working children when age, diet, activity and illness were controlled in regression analysis. This difference disappeared when the socioeconomic variable was added to the previous model. According to this result it seems that work status and socioeconomic status variables are highly interrelated; however, the presence of one obscures the effect of the other.

Sitting height and bi-acromial diameter were also significantly higher in non-working than those of working children. On the other hand, work related variables (work hours and number of working days) did not demonstrate any significant effect on the above mentioned growth parameters. The incidence of illness was not significantly different between the two study groups. [De la Paz, 1991]

The study seems to be one of the most relevant studies on the issue of child labour and health. It is a real attempt to assess the exact effect of child labour on health



using a proper study design (case control study) and statistical technique (regression analysis) which allows adjustment for the effect of confounding variables especially socio-economic status. Finally the tables appear to be adequate, clear, and easy to interpret. The health measurements used also seem to be adequate, reliable and non-invasive.

Exploitation of children is still persistent in the developed countries despite prosperity and active laws in these countries. For example, the survey carried out in 1983 on school age children in London [Pond and Searle, 1990], showed that 10% of working boys had been injured at work, and 7% of girls had consulted the doctor as a result of their injuries at the work place.

Another survey [Pond and Searle, 1990] conducted on 1827 school children in 13 schools in the Birmingham area showed a high incidence of accidents at work. 273 (15%) cases reported by the survey as accidents at work resulted from many forms of injuries, such as cuts, abrasions, fractures, and burns. The highest rate of injury appeared in the agricultural and manufacturing sectors. According to the findings of these studies, it is possible to conclude that child labour is still a problem in developed countries as well as in the developing world. In Great Britain, for example, the employment of children in illegal and hazardous job is still practised. This might be due to the low wages of working children who are employed as a cheaper alternative to adults.

A Japanese study [Shah, 1985][Medelievich, 1979] showed that those starting work before the age of 14 years were 4 cm shorter than those who started to work

after the age of 18 years.

Data of worker's compensation claims provided to the Supplementary Data System of the Bureau of Labor Statistics in 24 States of the USA were studied. [Schober et al, 1988] The aim of the study was to define the current status of occupational injuries among working children under 18 years during the period from 1980 to 1983. The study showed that total number of injury claims was about 23,823 in all 24 States. More than 60% of them were above 16 years and 30% aged between 15 and 16 years while cases less than 15 years were about 10%. The vast difference in rate might be due to the difference of working children in each age group. Cuts, lacerations and punctures were the most frequent injuries, which formed about 37% of the total injuries. Serious injuries such as fractures, dislocations and amputations formed about 7%. Most compensation cases (50%) occurred in the retail trade followed by the service and industrial sectors (21% and 9% respectively). The data presented in the study are likely to underestimate the true level of child injuries because not all the workers are covered by the State compensation benefit.

In spite of this limitation, the study provided interesting information about working children who continue to be subjected to the hazards even though the law prohibits employment of children under 18 years in the USA.

Summaries on the relevant studies carried out on the health impacts of child labour are reported in the following tables.

Table 12. Cohort and Case-control studies examining the relationship of child labour with growth

Author/ year	Study design	Setting	Exposure	Outcome	Control for SES and parental height	conclusion
Satyanar- ayna et al, 1986	Cohort (17year follow up)	Hyderabad India	Child farmers in families; waged farm workers; non- farm workers; students	Height and weight	No attempt to adjust for SES or parental ht	Ht & wt lower in workers compared with students; deficit in ht & wt greater in waged than children
Singh et al 1985	Case: control	Bombay India	Working v. non-working children in slums	Height	No attempt to adjust for SES or parental height	Ht of working children lower than non-working controls; children starting to work before 9 years more stunted than those starting at age 11
Joshi & Sharma 1996	Case: control	Jaipur City, India	110 working boys v. 290 school children matched for aged & area	Height; weight	No attempt to adjust for SES or parental height	Ht & wt controlled by age < in working children except among 6-8 year olds in whom no difference noted
WHO, 1987b	Case: control	Republic of Korea	593 female factory workers < 18 years v. 109 girls applying for work	Height; weight	No attempt to adjust for SES or parental height	Working girls taller & heavier than controls



Mahathevan	Case: control	Malaysia	210 working children (155 boys & 55 girls) aged between 7 – 15 yrs v. 210 age, sex, ethnic group & SES matched school children	weight	No adjustment for parental height	48% of working children 'underweight' but no figures given for controls
Mitra, 1993	Case: control	Calcutta, India	40 boys (7-14 yrs) working in leather workshops v. 40 age, area and SES matched controls	Height: weight	No adjustment for parental height	No ht or wt differences between cases & controls
De La Pas, 1990	Case control	Philippines	113 working v. non-working boys matched for age & area	Height; weight; sitting height	Adjustment for SES but not for parental height	Ht & wt differences between cases and controls disappeared on adjustment for SES: working hours & days not correlated with growth parameters measured
Ambadedar et al, 1999	Case control	Nagpur, India	223 working v. non-working boys and girls	Height, weight and BMI	Adjustment for age and gender	Wt, ht and BMI differences between cases and controls were significant for the boys, while it were not for girls

#### **4.6.2 Psychosocial problems and child labour:**

The presence of children in the labour force usually deprives them of leisure, play, study and recreation, which are fundamental for healthy psychosocial development of children. [Shah, 1984][ Shah, 1985] Children, who are thrown into life without passing through the psychosocial stages of puberty and exposed to the adult life without any preparation, are exposed to the dangers of drug addiction, smoking, smuggling and prostitution. [Banerjee, 1979] Many reports state that long hours of work at an early age adversely affect the psychosocial development of children increasing their risk of involvement in prostitution, addiction and delinquency. [Shah, 1984][Banerjee, 1979]

For example, an unpublished WHO-sponsored review of studies carried out on four groups of working children in Kenya was performed in order to highlight the psychosocial problems of working children. The study revealed that withdrawal, regressive behaviour, premature ageing, depression, inferior status of self-esteem and resistance were common in the first group where the children were engaged as baby sitters and household helpers. The second group, who were engaged in agricultural activity with their parents, mostly appeared to be indifferent and introverted with a feeling of worthlessness which developed in some of them into a fatalistic attitude. Children in the third group who were engaged in street work showed an excessive use of coffee, cigarettes and alcohol with a high tendency to be involved into criminal acts.

The fourth group who were engaged in industrial activity revealed high emotion with low creativity and inability to transcend the reality of working children. [WHO, 1987e]

Many experts on the issue state that working children are exposed to psychosocial risk more than non-working children and adult workers. This high exposure might be due to the work and its circumstances, in addition to low socio-economic status, which forms another psychosocial stress factor on the working children. The shortage of family supervision and support and the hard discipline of the employers might constitute other stress factors, which affect the psychosocial status of the child workers.

In summary, it is not easy to define exactly the adverse effects of child labour on psychosocial status of working children, but it is obvious that working children are at risk of inadequate time for education, leisure and recreation which are essential for their psychosocial development. Time for social life is likely to be limited by long working hours. Referring to a study on children working in match factories in India, it appeared that 45000 children were obliged to get up at 3.30 a.m. to reach the workplace and come back home at 7 p.m. [Shah, 1985] Such children are exposed to adult life without passing the normal psychosocial stages of childhood.



## 4.7 Conclusion:

The review of the available literature shows that child labour is still a widespread and perhaps even growing phenomenon in much of the world today. According to an ILO assessment, 100-200 million children less than 15 years were working. [Habenich, 1994][Pollack et al, 1990] This is thought to be an under-estimate [Ashagrie, 1997a] since in some countries, many young workers below the age of 15 are not included in the labour force statistics because of the large variety of terms used to describe the notion of childhood and labour. [Shah, 1985] Children who both work and attend school are usually considered as pupils rather than workers. Moreover, in most countries child labour is clandestine and hidden. [Habenich, 1994] The phenomenon was more acute in developing countries. Most of child labour is carried out by those between the age of 10 and 14 years and sometimes children as young as 4 years are found to be working. These children are mainly drawn from the lower socio-economic rungs of society. They live mostly in slum areas and are deprived of basic needs such as safe water supply, proper housing, adequate nutrition, and access to educational facilities

Despite the difficulty of obtaining precise data on the levels of remuneration among working children, low wages and excessive hours of work appeared to be the characteristics of child labour in most countries. However, regular employment or work deprives children of the time and opportunity to go through normal development at the most critical stage of life.

Asia and Africa are the leaders in the practice of child labour, together accounting for more than 95% of total child employment over the entire world. [Faraaz and Patrinos et al, 1995] India alone has about 44 million child workers. In Pakistan children between 10 and 14 years of age form about 10% of the national workforce. [Myron, 1991] Nigeria has about 12 million child workers. [ILO, 1992]

In the Arab countries there is limited data on the labour participation rates of children and mostly not highly accurate when it is available since the figures usually estimated according to the observation and the prevalence of drop out from schools.

This might be due to the fact that most of governments of Arab states appear to resist collecting valid data on the issue. [Mustafa, 1996]

Eradication of child labour is not easy. The phenomenon is rooted in the traditions and attitudes of the regions where it is practised. As a remnant of the past, it is resistant to change. In the formal sectors some successes have been achieved because man is being replaced by machinery and because inspection of premises of labour is easy. On the other hand, in the informal sector the problem is growing because the shape and nature are undefined ranging from domestic work to street vending.

The International Labour Organisation has spent a huge effort in combating the phenomena. Most States around the world have benefited greatly from Conventions originating from this organisation on the prevention of child labour in

the last century. They have initiated and passed legislation against child labour.

Work is often harmful to the child because its body and mind are not sufficiently developed for him to work without their suffering damage. Growth in working children may be impaired because of inadequate intake of essential nutrients resulting from poverty and/or from the increase consumption of energy during the work.

Working children are also exposed to numerous health hazards, which are mostly a result of bad working environments. The harmful environment manifests itself through excessive fatigue, poor nutrition, excessive infections, stunted growth and exposure to toxic chemicals.

Working children are exposed to very limited social interactions. There is a widespread exposure in term of job and clients, but in terms of the variety of social relationships their experience is rather restricted which has an adverse effect on the wholesome development of their personality. Separation from a family is a traumatic experience for a child. Young children running away from their homes are faced with a sense of insecurity due to the shortage of family supervision and support.

The hard discipline of the employers also constitutes another factor, which affects the psychosocial status of the child workers.



## ***Chapter Five***

### ***Material and Methodology***

## 5.1 Introduction

Conducting a research project requires the development of appropriate research methodology and the adoption of data collection techniques. The quality of the collected data determines quality of the findings of the research.

Researchers in the field of child labour have used different research methodologies and data collection techniques. These methodologies and techniques have both strengths and weaknesses, and are either qualitative or quantitative and analytical or descriptive.

The use of particular methodology for a research project depends on the scope, purpose, targets population, etc. of the study as well as the resources available to the researcher. It is essential, therefore, that in order to meet their objectives, researchers adopt the right methodology and select the right data collection techniques through which they can collect the required data within their available resources.

The following section will present a brief discussion about the research approach in this study. This will be followed by several sections that discuss in detail other aspects of the research methodology in this study such as setting of research, study design, sample size and unit of analysis, the questionnaire and structure. Furthermore, the sampling technique and the survey procedures are explained as well as the data analysis methodology.

## **5.2 The research approach in this study**

In a country such as Jordan in which traditions and sometimes religion penetrate most aspects of the society, it is essential for researchers to be aware of cultural characteristics and the value systems of the research environment.

Researchers should be particularly sensitive when conducting research in this environment otherwise their attempts will fail to produce the required co-operation or will end up with meaningless results.

The study employed both qualitative and quantitative survey methods. With these particular methods it is possible to collect data from a large number of individuals in a wide range of areas.

A clear advantage of this approach is that it has been used and proven by many researchers such as ILO. [Ashagrie, 1997a][ILO, 1995b] This allows quantitative analysis in hypotheses testing and also has the potential to generalise the findings to other similar areas where child labour is practised.

### **5.2.1 Phases of the study**

The research period was divided into three main phases:

**5.2.1.1 Phase one:** This phase lasted from October 1, 1997 to August 30, 1998.

During this period, an extensive literature review in the field of child labour was conducted to find out about previous studies in the subject matter of this thesis.

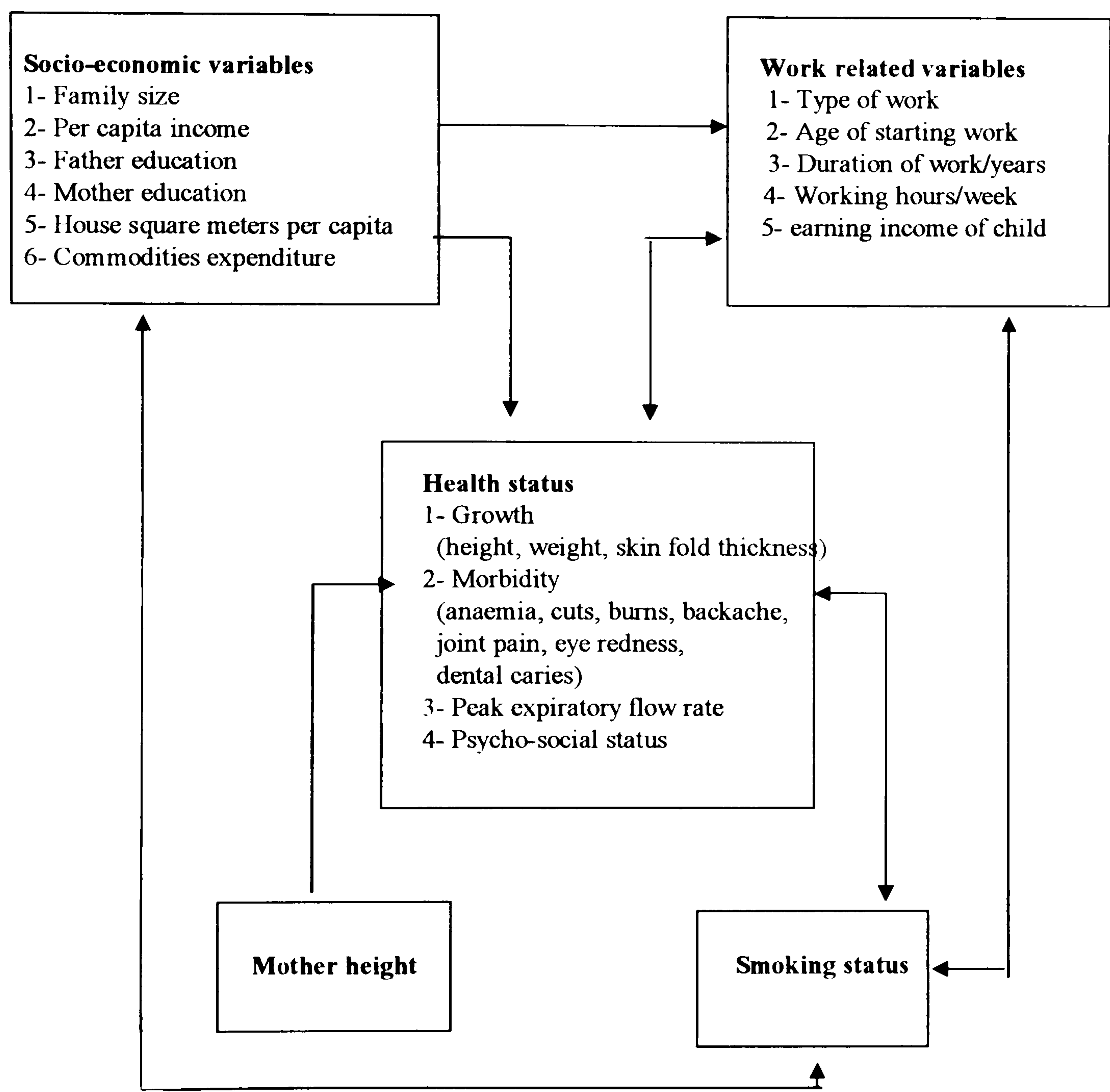
For this purpose, primary and secondary searches were carried out to identify the



relevant literature on the subject (see chapter 4).

A research framework (figure1) was developed at this stage to guide the study. In addition, the researcher reviewed the research methodology literature with the intention of developing and/or adopting methodology suitable for this particular research.

Figure 1. Conceptual Framework for the Study of Child Labour and Health



#### **5.2.1.2 Phase two:**

This phase lasted from the beginning of November 1998 to the end of May 1999. At this stage key informants in the field of child labour were identified and interviewed in order to obtain knowledge of the extent and nature of child labour in Jordan. Then, the study population was defined and the study sample selected. The questionnaire was piloted following which interviews were undertaken. In addition, time was also spent on entering and storing the responses and updating the literature.

#### **5.2.1.3 Phase three:**

The remaining time of the research period, which ran from the beginning of June 1999 to the end of 2000, was spent analysing data, testing the research hypotheses, discussing the results and writing up the thesis

### **5.3 Setting**

The selection of an area to carry out a study on child labour is a complex issue, because of several variables, which need to be taken into account, such as geographical, economical, social and historical factors that could affect the manifestation of the phenomenon.

In order to select appropriate settings for the study, the researcher interviewed informally a group of people who were considered to be knowledgeable about

child labour at the national level. These people, who could be considered as key informants, consisted of two individuals from the Ministry of Labour, two from the National Task Force For Children (hereafter NTFC), one from WHO, one from UNRWA, and one individual from the Ministry of Social Development in Jordan. These people were thought to be the appropriate individuals and in the right position to provide the necessary information about child labour in the study area.

Based on the background of the researcher who worked as a school health medical officer and paediatrician for many years in different places in Jordan, and according to the information provided by the above mentioned key informants, Irbid, Jarash and Northern Jordan Valley areas were selected as the research study areas. These areas in the northern region of Jordan cover an area of 2300 square kilometers (Km<sup>2</sup>). [Irbid, 2000][Jarash, 2001] The area contains approximately one million people, which form about 25% of the total population of Jordan. [Department of Statistics, 1999] Residents of the region live within a wide range of socioeconomic conditions, from densely populated deprived inner-city areas to affluent residential districts and sparsely populated rural areas.

Irbid is considered the second largest governorate in Jordan with 800 thousand people. [Department of Statistics, 1999] Irbid City is the capital of the governorate surrounded by 9 towns, 2 Palestinian refugees' camps, and more than 100 villages. [Irbid, 2000] This governorate is considered as one of the main industrial areas in Jordan and distinguished by high commercial and trade activity.



Jarash governorate is a small area with 140 thousand people. [Department of Statistics, 1999] Jarash City is the capital of the governorate, which is surrounded by 54 villages, and 2 camps of Palestinian refugees. [Jarash, 2001]

Jarash is one of the oldest cities in the world, built by the Romans. The nature and the history of the city make it the main tourist site in Jordan. The rural area of Jarash governorate is a mainly agricultural province, which provides the country with a large quantity of vegetables and fruits in the summer season.

Northern Jordan valley is the largest agricultural province in Jordan which provides the nation with vegetables and fruits in the autumn and winter seasons. It is spread on 179 km<sup>2</sup> and contains about 100,000 people. [Irbid, 2000] Most of them are employed in agriculture and agriculture-related activities.

The study area chosen has a wide range of different types of community, a fair geographical spread, and a wide variety of economic activities. Thus, it might provide a realistic indicator of the national status of child labour problem allowing generalisation of the results to Jordan as a whole.

## 5.4 Study Population

According to a study carried out by Fergany in 1993, and published by the Arab Council for Childhood and Development, 10 million children (3% of the total population of the Arab world) were estimated to be engaged in work in the Arab countries. [Fergany, 1993] The study also reported that child labour prevalence varied between the Arab countries as it was produced through the measure of

education level and the family income. Jordan, Syria, Iraq, Libya and Lebanon were estimated to be within the average level (3% of the total population).

Owing to the absence of any accurate official census about working children in Jordan, the researcher accepted the estimates of the above mentioned study, which predicts at least 100-120 thousand children under 16 years are engaged to work in Jordan, and 25-30 thousand children in the study area.

According to the latest UN estimates [Ashagrie, 1997a] and to information obtained from the key informants, the participation rate of children between the age of 10-14 years in child labour is usually six to eight times higher than that of their younger siblings (between 5 -9 years of age). Therefore, the lower bound of the study age group was set at 10 years.

The upper age bound was determined according to the Jordan labour law No 8 1996, which considers the age of the child as below 16 years. [Ministry of Labour, 2000] Consequently the age group of the current study was 10-16 years.

## **5.5 Ethical considerations**

Owing to the absence of any organisation or institution responsible for ethical issues relating to medical research in Jordan and in order to maintain high ethical standards, the researcher used the following ethical guidelines to protect the rights of the research participants:

- 1- Voluntary participation: before the requirement of consent from the participants to participate in the study, the researcher explained as fully as

- 2- possible, and in terms meaningful to the participants, the aims and the nature of the research, who is undertaking it, who is funding it, its likely duration, the possible consequences of the research and how the results are to be disseminated and all the likely disclosures of personal data.

In order to obtain informed consent from the participants the following steps were taken:

- a- The researcher visited all the work places selected for the study and met the employers. The reason of the visit was firstly explained to the employers and then full information and questions about the research, in term of its aims, procedure and the possible consequences of the research, were clarified. Most employers (70 out of 73) were prepared to allow their employees to participate in the research. Employees of those employers refusing permission to enrol them were excluded from the study.
- b- Working children available at the selected work places were met by the researcher who explained to them in detail the objectives, the procedure, the instruments used during the study, the possible consequences and the implications of the study. Moreover all children were informed that participation in the research was voluntary and no harm would arise from refusal. The children appeared very enthusiastic and no child refused participation in the study. Following this primary consent the researcher started to obtain basic information about the addresses and phone numbers of working children's families to arrange meetings with parents. When the



- c- telephone was not available the meeting was arranged through the child.
- d- The researcher visited the parents according the above mentioned arranged meeting and full details were given about the study. The parents also appeared very co-operative asking their children (working and siblings) to be available at the time of the interview.
- e- In the case of school children the procedure of obtaining informed consent was similar to that of working children. The researcher officially applied to visit the schools selected to be included in the study, through the local education directorates in the areas where the study took place. The heads of the education directorates were very helpful and issued official letters to the principals of the selected schools recommending them to facilitate the process of the study. The researcher visited the schools and met the principals and explained to them again the nature of the study, the objectives, procedure of data collection and the instruments used in the study and the implication of the study. The school principals agreed to co-operate in the study. The children recruited in the control sample were selected randomly through the registers available in the schools. All these children were met by the researcher who explained to them again the purpose, the objectives, the procedures, the instruments and the implication of the study. All the children agreed to participate in the study. Then the researcher started to collect basic information about the addresses of the students' parents in order to arrange meetings with them. Children with no phone available at home were asked to arrange the

f- meeting directly with their parents.

The researcher visited the parents and the same procedure during the meeting of working children parents was performed.

All parents appeared interested and encouraged their children to participate in the study.

- 3- Avoid harm: non-invasive and proper tools were used as far as possible during fieldwork. The measurement procedures and laboratory test (PCV) were applied systematically consistent with techniques used in previous studies. Measures were taken to protect all working children from physical, psychological or economical harm which could be inflicted by their employers due to their participation in the study. These measures are summarised as follows: a- the first contact during the fieldwork was made with the employers and full explanation of the study aim and its implications; b- all the employers were kindly required to participate in the study with their full agreement; c- avoid any contact with the children during the busy hours which could harm the employer's economic activity.
- 4- Confidentiality and anonymity: the researcher ensured maximum confidentiality of the research participants by carrying out the interview individually and privately. All the information and data obtained from the participants and related to the research was entered directly from the proforma and stored on the hard disk, backup copies were made on floppy disks. A password was needed to access the data on the computer, and this was known

only to the researcher. The floppy disks were also kept in a locked case.

At the end of the study, any data, which could be used to identify the child or their family, will be destroyed. Results of the study will be provided in an aggregated form whereby it will not be possible to identify individual children or their family.

As a result of the above-mentioned procedure, children and parents were very co-operative and agreed to participate in the study. The high level of participation in the study may be partly explained by the following factors:

- 1- The researcher was known in the study area where he had been working for more than 13 years at the different health centres of the UNRWA. This may have helped to ensure a positive response to the research.
- 2- Generally speaking doctors in Jordan are highly respected in the community and mostly the people trust them. This seemed to be another reason why the participants were co-operative and interested in the study.
- 3- Even though the practice of hiring children is illegal in Jordan, the law seems to be very lax and it is common to employ children at an early age. This may explain why problems were not encountered in obtaining consent to a study of child labour.



## 5.6 Study Design

The study has a cross-sectional comparative design. It is designed to examine the impact of work and socio-economic status on the health and psychosocial status of 135 working boys in Irbid, Jarash and Northern Jordan Valley. This kind of design gives the opportunity to collect all data in the same time and does not need for follow-up period. This also permits to complete the research within a given time defined for the thesis. The design allows for one exposure (work status), multiple outcomes (growth, PCV, skinfold thickness, psychosocial status, etc) and evaluation of potential confounding (smoking and social factors). On the other hand the design may shows some weaknesses such as the possible differential recall for workers vs. non-workers.

The study unit was the waged and non-waged male working child aged from 10 to 16 years employed in any activity within Irbid, Jarash or Northern Jordan Valley.

A group of 405 non-working schoolboys matched for age and residence were recruited as a control group. Moreover, 103 siblings of working children were also selected to be another control group in the study. The sibling group were boys aged between 10 and 16 year of age and represented the closest siblings to the working children. Only boys were recruited in the study because the practice of employing girls in child labour activities is very rare in Jordan due to cultural issues and, when they are employed, girls are usually engaged in invisible work making it difficult to reach them.

Growth indices (height for age z score, weight for age z-score, skinfold thickness percentile), packed cell volume, peak expiratory flow rate, prevalence of morbidity and psychosocial status were used as health outcomes of all children included in the study.

## 5.7 Sample size

Nutritional status, expressed as height, weight, Packed Cell Volume (PCV) and skinfold thickness, was the principal measurement of health status used in this study. Prevalence of poor nutritional status among Jordanian children is required to calculate the sample size. Few data on the prevalence of poor nutritional status are available for Jordanian children. UNICEF studies have shown that the prevalence of stunting (height for age z-score  $\geq -2SD$  of the median height for age z-score) was 16% and 15.7% respectively in pre-school males and females. [UNICEF, 1993] [UNICEF, 1999] Stunting prevalence may be expected to increase among older children leading to an estimate of stunting prevalence of 20% among boys of 10 years or more. No figure was also available for working children. The prevalence of malnutrition in the study group was assumed to be close to that of working children in developing countries, which was between 35-40%. [El-Sahn, 1992]

Based on these estimates the sample size of the study group was calculated by using the table for comparing proportions prepared for estimating sample size

when the outcomes in the two groups of the study are either categorical or continuous. [Campbell et al, 1995] Assuming that the proportions of malnutrition among the working and non-working children group in the current study were 35 vs 20, the sample size was equal to 138 in each group.

Three non-working children for each working child in the case group were selected randomly, as a control group, from the elementary and secondary schools in the same areas where the study group children were living. The decision to select 3 control children per working child was made in order to increase the power of the study as the sample size calculations, based on estimates of stunting prevalence among boys 10-16 years, may be inaccurate. Selection of more controls than cases ensured against loss of controls due to non-participation as controls were expected to have less incentive to participate in the study.

A group of 103 siblings of working children were also selected to be another control group. These siblings should be non-workers and aged between 10 and 16 years in order to satisfy the condition of recruitment.



## 5.8 Sampling

Sampling is very important for researchers engaged in survey studies. It is necessary for the researcher to specify the method used in selecting a sample because the sampling method is critical to the validity of inferences made from a sample to a population.

Sampling is defined as a procedure that uses a small number of subjects or that uses subjects of the population to make a conclusion regarding the whole population. [Daniel, 1991] Sampling is used because in many cases it is impossible to study the entire population.

Experts in statistics [Hawkins and Tull, 1994] pointed out some important issues that researchers should be aware of when choosing a sample for their study, these include

- 1- who is the relevant population?
- 2- what type of sample shall be drawn?
- 3- what sampling frame shall be used ?
- 4- what size of sample is needed?
- 5- how much will the sample cost?

According to the literature, there are two methods of sampling design. [Steel and Torrie, 1987] One is probability sampling in which the elements in the population have some known chance or probability of being selected as sample subjects. This method consists of four kinds of sampling: simple random (unrestricted random

sampling), systematic, stratified random, and cluster sampling (restricted random sampling). These sampling designs are used when the representativeness of the sample is of importance for purposes of wider generalisation.

The other method is non-probability sampling in which elements in the population do not have any probabilities attached to their being chosen as sample subjects. This method consists also of four kinds of sampling: convenience, purposive, judgement, or quota sampling. This method is used when time or other factors rather than generalisation become critical. This means that the findings from the study of the sample cannot be confidently generalised to the whole population.

Since this research is a cross-sectional survey, the sample was selected from different areas and sectors where children were engaged in work using stratified random sampling because this technique is an efficient research sampling method. It allows for segregation of working children according to the shape, nature and extent of the phenomenon of child labour.

This method also ensures that different groups of a population are adequately represented in the sample. This method of sampling has the power to maximise variation between groups and variation within groups.

The major problem in child labour sampling is the localisation of working children who frequently move from area to area, or from site to site within the same area. To overcome this problem and to present reliable figures, the following steps were taken:

**1 - Key people at the level of the study area (camp officers, area health officers.**

school headmasters, Ministry of Labour representatives, and police officials), were informally interviewed in order to identify the most probable sites and the type of occupations in which children were engaged.

2 – Once the sites of child labour practice were localised, the different parts of the study area were mapped. Establishments and places where children were working, schools, and main streets were depicted on the map.

3 - Once the map had been completed, it was used as a tool for structured observation. The researcher walked around the study sites marked on the map, and described in writing each of the occupations being observed. The observations were undertaken once during the day and again during the evening in order to observe every possible kind of work. The observations and the counting of the various kinds of work were listed and kept in a record.

4 - The collected data showed that the majority of working children in Irbid (80%) were engaged to the industrial sector at Irbid Industrial City, Prince Hasan Industrial City, and Hemmieh Street.

The other 20% were engaged in the services sector in the city centre (Palestine St., Al Hussen St, and Idon St.).

The collected information showed that most of working children in the Jordan Valley were engaged in agricultural activities on the farms in Northern Shouneh, Waggas and Kraymeh zones.

The magnitude of child labour in Jarash was quite different from the other two areas. It was estimated that 75% of working children were engaged in the services



and commercial activity within Jarash wholesale vegetable market, Jarash camp and the motorway joining Irbid and Amman. The remaining 25% of working children were engaged in industrial work within the industrial area in the north of the city and various garages spread on the street between Jarash City and Jarash camp.

A stratified sample was selected randomly from all the above three sectors proportional to their size in the three areas of study. Sixty working children were selected from the industrial sector within Irbid area, 30 from Irbid industrial city, 20 children from Prince Hasan industrial city and 10 children from Hummieh Street. 15 children were recruited into the sample from the services sector in the city centre (Palestine St., Al Hussen St., and Idon St.). Thirty-five working children from Jarash area were recruited in the sample. Twenty-five of them represented the service and commercial sector with equal proportion from Jarash wholesale vegetable market, Jarash camp and the Irbid-Amman motorway. The other ten children were selected from the industrial sector sited in the north of Jarash city and on the street which links Jarash city with Jarash camp. Twenty-five working children from the agriculture sector were selected with equal proportions from Northern Shouneh, Waggas and Kraimeh farms within Northern Jordan Valley area.

All working children included in the sample were selected upon their availability at the work place at the time of recruitment process. 15 visits to Irbid area, 10

visits to Jarash area and 6 visits to Jordan valley were undertaken during the sample recruitment.

**5 -** Once the working children were sampled, all schools sited in the residential areas of working children were listed.

After the consent of the education departments in each study area, the researcher visited each of the listed schools according to an appointment arranged previously with its principal.

The schools included in the sampling process were only 11 out of the 23 listed schools; 5 schools in Irbid area; 3 schools in Jarash area and 3 schools in Jordan Valley area. The criterion of school selection was based on the availability of classes between 5 and 10 in which the school children were between 10 and 16 years of age.

Four hundred and five school children (with a rate of 3 school children for each working child) were selected as a control group.

Children included in the control group from each school were calculated according to the number of working children living in the same area. The children were identified from the registers available in the selected schools through simple randomisation.

The response rate of controls was extremely high. None of the selected school children refused participation in the study, but four of them were absent at the time of interview, so the next child in the register was substituted for them.

A group of siblings, with a rate of one sibling (when available) for each

working child, were also selected as a second control group. Male siblings, either younger or older than the working subject, had to be non-working and close to the age group of his working brother to be included in the control group. However, only 103 siblings satisfied these criteria.

## **5.9 Instruments**

**5.9.1 Questionnaires:** During the planning stage of this study, few research studies and little information about child labour and health were found. Therefore, it was felt that the interview questionnaire method would generate far more data while at the same time minimising the time and effort required of the researcher and the respondents.

This method is generally found to be the best technique to collect data from a large group of respondents in a short time and provides the opportunity for the respondents to give frank and precise answers.

Conducting a questionnaire survey is the process of translating concepts into measurable variables. The research variables were tested by questions in a quantitatively measurable way such as rating, ranking and dichotomous questions.

The questionnaire was designed and developed by the researcher after a review of prior studies in the field of child labour. Some of the items and measures in the questionnaire were directly adopted and or adapted from the work of some of these researchers.

The aim of the questionnaire was to collect the data necessary to help quantify the



impact of child labour on the health status of working children.

The questions in the instrument sought information on three areas: 1-work and demographic characteristics of working children and their controls, 2-socio-economic status characteristics of both groups in the study, 3-morbidity rate and anthropometry of all children included in the study.

The questionnaire was designed to be close-ended and specific enough to reveal answers to the instrument's questions. Many of the questions in this instrument sought dichotomous yes/no answers. Other types of questions required the interviewer to write a digit number in a box or square.

Before translating the instrument into Arabic, the researcher discussed its questions with Professor Spencer, Head of the Department of Community Child Health at the University of Warwick, in order to ascertain their suitability to test the research hypotheses reported in chapter 2. The questionnaire was then translated, pilot tested, edited and coded for the purpose of computer processing in the later stage of analysis.

Two structured interview questionnaires were prepared previously and translated to the local language in order to be clear for both the interviewer and the children included in the study.

The first questionnaire was assigned au the working children, while the other one was assigned to the school children. These questionnaires were divided into three parts.

Part one of the first questionnaire was designed and then conducted at the work

place of the working child. It consists of 14 questions which focus on collecting detailed information about his work and demographic characteristics such as age, residence, type of work, working hours per week, age of starting work, child income and smoking status. These questions were related to the research hypotheses and directed to identifying some characteristics of the working children in order to assist in the analysis and to provide access to information such as address and telephone number for future communication. Part one of the school children's questionnaire was designed for completion in school. It consisted of 6 questions related to the demographic characteristics of school children.

Part two was similar in both questionnaires. This part was structured and then conducted at the level of households of both working and non-working children. It consisted of 25 questions and focused on collecting detailed information about the main determinants of socio-economic status of both groups. These determinants were the amenities in the house, per capita income, per capita house square meterage, parents' education level and occupation of the head of family.

Part three consisted of seven questions. It was designed to measure the anthropometric indices, anaemia prevalence, lung function and morbidity rate among working and non-working children and their non-working counterparts. Anthropometry was assessed through height, weight, and skinfold thickness; anaemia prevalence was assessed by the level of packed cell volume (PCV); lung function was assessed by the measurement of peak expiratory flow rate (PEFR), while morbidity was assessed through the point prevalence rate of burns, cuts,

Back pain, knee pain, eye redness, and dental caries. This part also included questions related to the anthropometry and lung function of siblings and maternal height of working children. Siblings and mothers were not measured for the control children.

In order to test the validity of the instrument the researcher carried out two pilot studies in different settings and at different times as explained in detail in section 5.10. The first pilot study revealed that some of the questions, formulated in a direct way, did not draw accurate answers from the parents. For example when the question was asking about the family income directly the figures given by the parents appeared to be inconsistent with the nature of their occupations and available assets in the family. To overcome this weakness, some questions were omitted and others were added in order to obtain accurate figures on the income. Then, the new questionnaire was tested firstly by a pilot study on 20 working and non-working children and repeated by another pilot study on the same children after three weeks.

The results of the two pilot studies revealed high consistency and reliability. Most answers appeared identical in the two settings and only one of the parents gave a different statement about the income (see section 5.11.1). The responses showed a high level of accuracy regarding the income of the family.



### **5.9.2 Adaptive Behaviour Scale:**

This scale was prepared according to the Adaptive Behaviour Scale for Children and Adult (AAMD) [Nihira et al, 1974] in order to assess the psychosocial status of the working children and their non-working counterparts. The structured scale consists of four factors, which assess the different aspects of psychosocial status (violent behaviour, antisocial behaviour, rebellious behaviour and psychological disturbances). Each factor contains different numbers of domains. Each domain consists of three to five items, which express certain negative or abnormal behaviour. Each item was scored from zero to two. When the item (negative behaviour) is not present the child gets zero score, when it is present occasionally the score is one, while the child gets 2 when the negative behaviour is present frequently. The domain score is simply the summation of all item scores within a given domain. Factor score is the summation of the domain scores with a given factor, and finally the psychosocial status of the child is weighted by the summation of all factor scores. The psychosocial status is better when the total factor scores is lower and a high score represents poor psychosocial status.

#### **5.9.2.1 Reliability and Validity of the instrument:**

The AAMD Adaptive Behaviour Scale was designed to measure children's personal independence and social skills. It was standardised on a sample of 6523 individuals in California and Florida ranging in ages from 3 through 17 years. Individuals were sampled from various racial/ethnic groups and locales, so the

diversity of the sample is very good compared to other adaptive behaviour scales. The Scale was used to measure the social competency and psychosocial adjustment of children in many studies over all the world. [Nihira, 1976][Nihira et al, 1988][Vandergriff et al, 1987][Taylor, 1980] The AAMD Adaptive Behaviour Scale has been compared with other Adaptive Behaviour Scales and found to be valid. It was compared with the Vineland Adaptive Behaviour Scales in 15 persons aged 8 to 18 and the correlation between the two instruments revealed good concurrent validity. [Perry et al, 1989]

The only form of reliability data documented in the technical manual is the internal consistency of each factor via the coefficient alpha technique. The coefficient alphas were high as 71 to 97. [Nihira et al, 2001]

### **5.9.3 Anthropometric measurements:**

Three anthropometric indicators (ht/age, wt/age, and skinfold thickness/age) assessed nutritional status of working and non-working children. Height and weight are the two measurements most often used in nutrition surveys. These two measurements and skinfold thickness, in combination with sex and age, can be used to define four indicators: weight for height, height for age, weight for age, skinfold thickness for age.

A widely used method of expressing anthropometric information is as prevalence of children who are considered “at risk” of growth faltering. Prevalence or the proportion of a population falling below a designated cut-off point for the

different indices is a useful tool both to identify groups at increased risk by expressing the magnitude of this prevalence compared to the international reference population and in comparison with other groups. [John et al, 1999]

In anthropometry, prevalence can be presented either by using centiles, standard deviations, z-scores, or percent-of median values. For each of these modes of expressing data, different cut-off points can be used. For example, with SD scores a cut-off point below  $-2$  standard deviations from the NCHS or the British reference median is generally used, or percentiles, the cut-off point, below the third or fifth percentiles of the same reference is used for the indices.

These measurements were used in the current study because:

- 1- the method is safe and non-invasive.
- 2- the comprehensiveness of the indicator.
- 3- computations with the two indicators of height and weight allow for the possibility of detecting both chronic and acute malnutrition.

**5.9.3.1 - height for age:** a large literature suggests that child height for age is a good indicator of long-term nutritional status. It is influenced by nutritional factors like long-term food shortage or non-nutritional factors like genetics, infectious diseases and negative socio-economic conditions. [Jelliffe, 1966] [Ministry of Health, 93] Children in the study who were too short for their age (below 2 Standard Deviations) were considered stunted. Stunting is defined as a slowing of skeletal and stature growth that is usually caused by periods of malnutrition in the child's life.



In order to measure the height, a fiberglass tape was fixed to the wall, and the child, after removing the shoes, stood on a horizontal flat floor by the scale with heels together, stretching upward to the fullest extent, aided by gentle traction by the researcher on the mastoid processes. The child's back was kept as straight as possible, which was achieved by rounding, or relaxing the shoulders and manipulating the posture of the child. A metal bar was lowered touching the top of head and the tape. The tape was 2 m high and capable of measuring to an accuracy of 0.5 cm.

**5.9.3.2 - weight for age:** it is thought that this indicator is a good short-term measure of the child health status. Children investigated were considered wasted when their weight for height is less than -2 SD.

Detecto adult [140 kg] scales [Detecto] were used for weighing the children. The scale was checked twice daily by the use of an object of known weight and corrected in the light of the test. Weighing was done for all children with only trousers and shirt and the scale was adjusted to read zero before the child was placed on it.

The interpretation of such indicators (height for age and weight for age) is possible through comparison with a reference population. The British standard and United States National Centre for Health and Statistics (NCHS) reference population have been generally accepted and recommended for use as an international reference for analysing anthropometric data for developing countries. Many classification systems were used over the years like the percentage of the mean, centiles of the

reference population and standard deviations from the mean (z-score). [John et al, 1999]

Once height and weight were obtained, height z-score and weight z-score for each child in the study was worked out using LMS software based on UK standards.. [LMS, 1998]

**5.9.3.3 - Skinfold thickness:** It is considered the simplest way to assess the body composition including information concerning the amount and distribution of the child subcutaneous fat and hence of calorie reserves. [ Jelliffe, 1966] All children were subjected to this measure in order to complement the other anthropometrics measures.

Harpenden skinfold caliper [Harpenden, 1997] was used to measure the triceps skinfold of all children in the study. The measurement site was halfway down the right arm between the tip of the acromion process of the scapula and the olecranon process of ulna. Once the arm was hanging and relaxed at the side, the skinfold at the back of the arm was grasped and slightly lifted up between finger and thumb of the left hand avoiding inclusion of the underlying muscle. The caliper was applied about 1 cm below the operator fingers at a depth about equal to the skinfold. Three measurements were made and the result was averaged. The skinfold thickness was also expressed as a percentile using triceps skinfolds standard chart based on UK standards. [Tanner and Whitehouse, 1985]

#### **5.9.4 - Peak Expiratory Flow Rate (PEFR):**

PEFR is a simple, non-invasive method of assessing lung function. PEFR was recorded for both groups of the study using a standard Wright's peak flow meter. [Airmed, 1997] Each child was asked to take a deep breath and blow out into the flow meter three times with 10-minute intervals, and the highest reading was considered the representative value. All children suffering from acute respiratory infection at the time of measurement were excluded. The PEFR was expressed as a ratio by height.

#### **5.9.5- Packed Cell Volume (PCV):**

It is a comprehensive and simple indicator, frequently used in research, to detect anaemia. [Seirverd, 1983] As a measure, it does not require a large quantity of blood, is simple to estimate [Seirverd, 1983] and is an indicator of nutritional status.

Each child in the study was subjected to blood withdrawal in order to measure the PCV level. Blood samples were taken by finger prick from all children after consent obtained from them and from their parents. Two capillary tubes were used for each child; one was used in the analysis and the other was kept as spare in case of damaging the first during the transport or the centrifugation machine used for the analysis. The capillary tubes of each child were closed by using special candle and put in a small plastic tube labelled by the name of the participant child.



The blood then was transferred to Jarash Governmental Hospital laboratory the same evening where the technician on duty measured PCV level for each sample by using the Adams Micro-Hematocrit method. [Seirverd, 1983]

Taking blood samples from the participants constitutes a major ethical issue in the study because the participants mostly were healthy subjects. For this reason the researcher first discussed the issue in detail with the participants and their parents clarifying the purpose of blood sampling, the procedure by which the blood was withdrawn, and the complications which could raise during and after the procedure. Then, the researcher highlighted the benefits, which the participants could obtain from the procedure. The researcher explained to the participants and their parents the prevalence of anaemia among children in Jordan. In return for their participation, the result of the analysis was returned to them directly at their work place and schools or through their residential addresses. All anaemic or diseased children were directed to the closest UNRWA health centre for the Palestinian refugees and to the governmental health centre for those who were eligible for free health care. All needed investigation was performed in these health centres and treatment was prescribed. Health services and treatment of anaemia are free in both governmental and UNRWA health centres.

### **5.9.6 Socio-economic Status measures**

There are difficulties devising a stable formula for the assessment of the socio-economic status across different communities due to the fact that the determinants of such status are usually varied and changeable within communities and over time.

A study carried out by Hliyzhed [Gharaibeh, 1983], aimed at analysing the components of socio-economic status, indicated that the education level, occupation, income and the residence of relevant parties were the most important determinants.

Jeffries and Ransford had revised the results of many studies in order to outline the social status of the American people. [Jeffries and Ransford 1966] They found that the best determinants of this variable were occupation and education. Although, income was an important determinant, it was usually correlated with occupation.

This result was supported by Miller, which showed that the correlation coefficient between these three determinants was about 0.91. [Miller, 1977]

Miller's study found that the Dikan scale was the most acceptable and used measurement of the socio-economic status in the USA. It was based on income, education level and occupation.

Study carried out in Jordan [Tog, 1980] and Syria [Nashawati, 1977] added the residence of the family as a fourth variable in order to assess the socio-economic status. A study, carried out on elementary students in Iraq [Alani, 1979]

introduced family size as a new determinant of socio-economic status.

In Jordan, a study [Gharaibeh, 1983] was carried on Jordanian secondary school students in order to assess the impact of socio-economic status on the academic achievement of the students. Socio-economic status was assessed through the rating of the education level of parents, monthly income, residence density, family size, house rent, occupation of the father. This brief review highlights two facts:

1. The absence of a stable formula for the assessment of the socio-economic status.
2. The absence of an updated assessment of the Jordanian socio-economic status, even though several economic and social pressures were placed on Jordan in the recent years.

During the period 1988-1991 sharp economic and social pressures experienced by Jordan as a result of regional crises and international economic adjustment processes lowered the Jordanian standards of living and set back the expected progress of most Jordanians. [UNICEF, 1993c]

Resulting from the above-mentioned economic and political conditions, a new assessment of socio-economic status in Jordan was necessary, as previous scales do not reflect the current status of Jordanians.

According to the above mentioned studies and surveys, and after interviewing 6 teaching staff from the field of social science in Jordan (3 from the Jordan University, 2 from Yarmouk University and one from Jarash University) six variables were thought to be the most relevant determinants of socio-economic



status in Jordan. These variables were: per capita income, education level of the father, education level of the mother, the occupation of the family head, house density (in square meters) and the running costs of durable commodities.

In order to estimate the social and economical value of the occupation of the head of the household of working and non-working children, forty two occupations, identified and thought to be the most frequent in Jordan, were chosen and included in a questionnaire and distributed to 50 people selected randomly from Irbid and Jarash Governorate where the child labour study took place (24 males and 6 females from Irbid; 15 males and 5 females from Jarash). The respondents were asked to describe the socio-economic value of these occupations by giving a weight for each kind of occupation within the range of 1-5 points. Out of the 50 persons who were approached, 41 persons (82%) fully completed the questionnaire. The mean of all weights given by the participants for each occupation was considered as a final weight for such occupation (table 13).

Table 13. Occupations weight as assessed by the Jordanian community

No	Occupation	Weight
1	Pharmacist	3.5
2	School teacher	2.9
3	Accountant	2.5
4	Farmer	1.7
5	Physician (G.P)	4.0
6	Parliament member	4.3
7	General Manager	4.0
8	University lecturer	4.0
9	Soldier	1.5
10	Head of division	3.0
11	Head of department	3.7
12	Skilled labourer	2.4
13	High army official	4.0
14	Lawyer	3.9
15	Judge	4.2
16	Journalist	3.3
17	Pray caller	2.1
18	Tour guide	2.0
19	Minister / Secretary Of State	4.7
20	Main contractor	3.5
21	Small contractor	3.0
22	Specialised physician	4.5
23	Company owner	3.5
24	Assistant pharmacist	2.6
25	Nurse	2.3
26	Unskilled labourer	0.7
27	Doorkeeper / Cleaner	0.5
28	Designer	2.3
29	Merchant	3.0
30	Retailer	2.4
31	Actor	2.2
32	School principal	3.2
33	Driver	1.8
34	Street seller	1.3
35	Clerical worker	2.6
36	University chancellor	4.5
37	Faculty dean	4.3
38	Dentist	3.9
39	Gold seller	3.0
40	Imam	2.8
41	Engineer	3.8
42	Veterinary	3.6

In order to simplify the analysis, each socio-economic determinant was divided in categories as follow:

1-per capita income: it was calculated by dividing the total household income of working and non-working children on the total household members. (Working child income was not included in the household income).

It was then divided in four categories as shown in table 14

Table 14. Per capita income categories

Category	JD
1	≤ 20
2	21 – 41
3	42 – 64
4	> 64

2- Head of family’s occupation: the heads of families were grouped into three categories (unskilled; semiskilled and skilled) according to the scores of their occupations as shown in table 15

Table 15 Occupations categories

Category	Occupation score
Unskilled	0.5 – 1.9
Semiskilled	2 – 2.8
Skilled	> 2.8

4- Education of parents: the education level of both parents was categorized into three levels according to the education stages achieved as shown in table 16



Table 16. Education level categories

Category	Education archived
Illiterate	No formal or informal education
School education	Primary, preparatory or secondary school education
Higher education3	College or university education

4- Per capita house m<sup>2</sup>: the house density was calculated by dividing total area of house (m<sup>2</sup>) on the number of household members. It was then grouped into three categories as shown in table 17.

Table 17. House Density

Category	Per Capita house m <sup>2</sup>
1	≤ 10
2	11 – 20
3	>20

5- Household durable expenditure: it was calculated on the most common commodities with a measurable expenditure, such as TV, video, telephone, fridge, satellite, central heating and car. The amount of expenditure was divided into three categories as shown in table 18.

Table 18. Running cost of common durables

Category	Durable costs
1	≤ 14
2	15 – 36
3	> 36

## **5.10 Content validity and reliability of instruments**

In order to determine if the instrument measures what it is intended to test (content validity), it was initially reviewed by five experts from the education faculties of Jordan and Yarmouk Universities who had taught social science courses. They were asked to update terms, to clarify confusing items, and to comment on the apparent validity of each item.

After examination by these individuals, several items in the instrument were changed, and the final form appeared as above reported

Twenty children (10 working and 10 non-working children) aged from 10 to 16 years from Jarash Governorate were interviewed and information on their socio-economic status was collected using the final form of the instrument. Three weeks later, the same procedure was performed on the same group of children. The information gathered in the two setting were found to be similar

## **5.11 Data Collection and processing**

**5.11.1- Pilot study:** A sample of 20 children, different from the clusters included in the study, was selected from Jarash area. Ten of them were working children and 10 were school students from the area where the working children were living. The pilot study was carried out to test the study questionnaires and tools used in the study. The first part of the interview questionnaire was used to collect basic information from the working child at the work place.

The second part of the questionnaire was used to collect information related to the socio-economic status of the family, anthropometric data on the working child, his non-working sibling and mother. Interviews of school children took place initially at school and were completed in the home. Parents of both groups were involved in the interview in order to gather accurate information about the socio-economic and the psychosocial status. Each interview took about two hours to complete.

The analysis of data revealed the following:

1- two working children (attrition rate of 10%) refused to participate in the study due to fear of their employers.

2- two mothers of children refused to be interviewed by males for religious reasons and consequently, their anthropometric measures were not obtained.

3- four parents gave contradictory information about family income because of fear of the Tax authorities in Jordan or possibly because of expectations of benefit if they classified themselves as low-income.

4- Most items of Mooney checklist [Mooney and Gordon, 1950] used to assess the psychosocial status were not suitable to be applied in the Jordanian community because most parents tried to deny psychosocial problems in their children even when they were obvious.

In order to overcome the above-mentioned limitations, the following interventions were performed:

1- the questionnaire was revised and some new questions were added in order to estimate the family income without relying entirely on parental statements.



Other items were omitted because they were not useful for the current study.

2- packed cell volume measurement was included in the assessment children's health status, because all children and parents agreed to give blood samples for this purpose.

The Mooney checklist to assess the psychosocial status of the children was replaced with the Adaptive Behaviour Scale For Children and Adults (AAMD) [Nihira, 1974], which assessed the psychosocial status of children in a less direct way.

Following these changes, another pilot study was carried out on a further 20 children using the revised questionnaire and the Adaptive Behaviour scale.

Before starting the interview, the objective of the current study was explained in detail to the children, employers and parents, and then the same procedure as for the initial pilot study was carried out. The attrition rate was zero and income and psychosocial status data were obtained without any problems.

The blood samples were drawn easily and sent to Jarash hospital laboratory.

It seemed that data obtained during the second pilot study were more accurate and reliable than those of the first, once the limitations of the initial design had been removed.

### **5.11.2 Data collection:**

Once the instruments and tools were prepared, the researcher visited each site included in the study area in order to contact and explain the aim of study to the working children and their employers.

Data collection in the areas of study was conducted according to a master timetable prepared in advance. It was started on the 1st of September 1998 within Irbid area, followed by Jarash area and then Northen Jordan Valley. Each working child aged from 10 to 16 years and available at the work place at the time of the visit was recruited and interviewed according to his willingness and the consent of his employer.

The employers were generally co-operative and only 3 out of 73 employers refused to participate in the study; one of them refused to participate because the child worker was busy and the other two refused because of personal reasons.

Each child recruited in the study was interviewed separately and confidentially.

The first part of the questionnaire was completed by gathering full information about the work and the demographic characteristics of working child. Each interview at this level took about 30 to 45 minutes.

In order to complete the second and the third part of the questionnaire, an appointment was arranged by phone call with the parents or through the child when such means were not available.

On the level of the household, detailed information was collected from the

parents, through 25 questions and statements, about the main determinants of their socio-economic status.

The third part of the questionnaire was also completed in the same setting through the assessment of anthropometrics and peak expiratory flow rate in each working child and his sibling.

Point prevalence of 6 morbid conditions (cuts, burns, knee pain, back pain, eye redness and dental caries) was also assessed through physical examination of the working child. Mother's height was also measured and recorded. Psychosocial status of working child was assessed through an adapted scale structured according to the Adaptive Behavior Scale for Children and Adult (AAMD). [Nihira et al, 1974]

At the end of the interview, a blood sample was taken by finger prick from the working child and his sibling after the consent of children and their parents.

The blood samples were transferred to Jarash Governmental Hospital laboratory the same evening and the PCV was measured.

The household interview took about 90 minutes and all working children included in the sample were interviewed within a period of 40 working days with an average of 4 working children per day.

Based on the information gathered from the working children included in the study, eleven schools (5 in Irbid, 3 in Jarash and 3 in Jordan Valley) were defined as the source of the study control group.

The proportions of children included in the control group from each school were



calculated according to the number and age group of working children living in the same area.

Each school was visited and the participant children in the sample were selected through a simple randomisation procedure by using the registers available at the school. Four hundred and five non-working children, selected from the above-mentioned school, were interviewed initially at school and then at home. The interview procedure was similar to that for the working children except for maternal height, which was not measured in the case of non-working children. An average of 5 non-working children was interviewed per day.

Data collection was completed in 5 months from the 1st of September 1998 up to the 7th of February 1999.

## **5.12 Data analysis**

Although data were analysed after conducting the survey, much thought was given to the testing and analysis of results during the questionnaire design.

The normal first step in analysis is the editing and coding of a collected data.

The researcher checked the data to make sure they were accurate, consistent and complete as much as possible and arranged to facilitate coding and tabulation.

Missing data for a particular variable were replaced by the mean of that variable in the sample. As a consequence, missing data for those variables did not occur and the numbers therefore did not vary. This procedure is unlikely to affect the consistency of this variable [SPSS, 1999]. All data collected through the

interviews were coded into coding sheet and entered as database file in a personal computer.

Statistical Package for Social Science (SPSS) version 10 [SPSS, 1999] and Epi-Info version 6 [Epi Info] software programs were used as tools for analysis.

Frequency distributions, percentages rounded to the nearest whole number and cross-tabulations of various variables in both groups of the study were produced in order to carry out statistical tests.

To answer the research question in any study, it is important firstly to identify the types of variables that will be used and choosing an outcome variable and one or more potential "independent" or determining variables. Once this is done, the most suitable statistical test will be used to see if a relationship exists. For this purpose the normality of the variables included in the study (dependent and independent) was examined through plotting histograms with normal curve overlaid. Most of variables were found to be normally distributed enabling the Student's *t*-test, correlation and regression analysis to be used. More details are reported in Chapter 6. Student *t*-test was used to examine the difference between the means of variables among working and non-working children, and working children and their siblings. Correlation coefficients and regression analysis at an alpha level of 0.05 were used to test for significant relationships between health outcome variables (dependent variables) and their predictors (independent variables). Goodness of fit and appropriateness of final regression models were assessed by plotting the residuals for these models through producing histograms and normal

probability plots. Details are shown in the text of Chapter 6 at the end of each regression model of dependent variables.

Odds ratios with 95% confidence intervals were used to determine statistical significance between categories. This particular test was used when there was a standard cut of point for the variable such as for example per capita income where the cut off point is defined as the per capita income for the Jordanian people.

### **5.13 Summary**

The present chapter has explained the research approach adopted in this study. It presented the factors, which influenced the choice of these techniques and approaches and their advantages and disadvantages. It also described in details how the study design, questionnaire and data collection instruments were developed. This chapter also explains the sampling techniques followed in this study and how it was conducted. Finally, it gives details of the questionnaire fieldwork procedures and reports the achieved response rate.



## *Chapter Six*

### *Results*

## 6.1 Introduction

The attempt to collect data on all variables for all children was successfully achieved. Therefore, the sample sizes of all sub analyses were similar.

In order to achieve the objectives of this study, the analysis was carried out in four phases:

**Phase one** (descriptive analysis): this is devoted to a detailed description of all variables (independent and dependent) related to working children, their siblings and non-working children. To achieve this purpose, central tendency and variabilities (frequency distribution, percentages means and standard deviations) were used.

Testing differences between means and rates were also examined in this section by using t-test, chi-square, and odds ratio.

**Phase two:** (correlation and regression analysis of data collected on working and non-working children): Simple correlation coefficients of exposure (socio-economic and smoking status variables) on outcome (wt for age z-score, ht for age z-score, packed cell volume, skinfold thickness percentiles, peak expiratory flow rate/age, morbidity prevalence and psychosocial status) were estimated.

Linear regression models were fitted on all outcome variables of working and non-working children using SPSS version 10.

All exposure variables, whether or not they achieved conventional levels of statistical significance on bivariate analysis were entered into the regression

analysis.  $R^2$  (the proportion of the variance explained by the model) and regression coefficient B (change in the outcome associated with a change of one unit in the exposure variable) for each exposure were estimated for the models fitted on all outcomes.

**Phase three** (work-related variables analysis): In addition to a full descriptive analysis carried out on the work-related variables in this section, simple correlation coefficients of socio-economic variables, mother's height and smoking status of working children on weight for age z-score and height for age z-score were also estimated. Linear regression models were fitted on height and weight z-score and only exposure variables achieving a significance level of  $<0.05$  were retained in the final model.

**Phase four** (working children and their siblings' data analysis): Full descriptive analysis for all exposure and outcome variables of 103 working children and their non-working male siblings was performed. Differences between the means and proportions for the two groups were estimated using independent sample t-test and odds ratio.

Problems of collinearity and interaction were diagnosed through the SPSS v 10 software system and, where necessary, their effects were minimised in the analysis. The confounding effect of age on growth was controlled through the use of height for age and weight for age z scores, while the confounding effect of socio-economic variables was controlled by using multiple regression analysis.



## **6.2 Descriptive analysis:**

### **6.2.1 Demographic and economic profiles:**

A total of 13 socio-demographic and economic variables among 540 subjects included in the study (135 working and 405 non-working children) were studied.

In order to assess the normality of the data collected on both groups in the study, histograms were plotted with normal curves overlaid as seen in figures 2&3 for family size, figures 4& 5 for house per capita income, figures 6&7 for house per capita m<sup>2</sup>, figures 8&9 for occupation of the head of the family.

#### **6.2.1.1 Family size:**

The study defined the notion of family size as the total number of adults and children living in the same household at the time of the interview.

Histograms plotted on the data related to both groups revealed that the data were not completely normally distributed as seen in figures 2 and 3 but comparison between the means of both groups was acceptable since the data were not severely skewed from the normal curve.

Table 19 shows that the family size of working children ranged between 4 and 30 members while for those of non-working ranged from 3 to 21 members.

The mean family size of working group (mean=9.7(CI=9.07,10.33)) was significantly higher compared with their non-working counterparts (mean=8.6, CI=8.45, 8.95)).

Means rather than medians were used for family size as the mean of Jordanian family size was available permitting comparison with the whole population.

Most working and non-working children (84.4 and 81% respectively) came from families with equal or more than 7 members. Families with more than 10 members were higher among working children compared to those of control group (31.1% & 20.0% respectively).

The family size of most working and non-working children was higher than the Jordanian average (6.4). [Department of Statistics, 1997] The proportion of families below Jordanian average was 15.6% for working and 19.1% for non-working children. The difference between two groups was not statistically significant (OR=0.78, (CI=0.45, 1.37, p=0.37)) (table 20).



Figure 2. Family size of working children

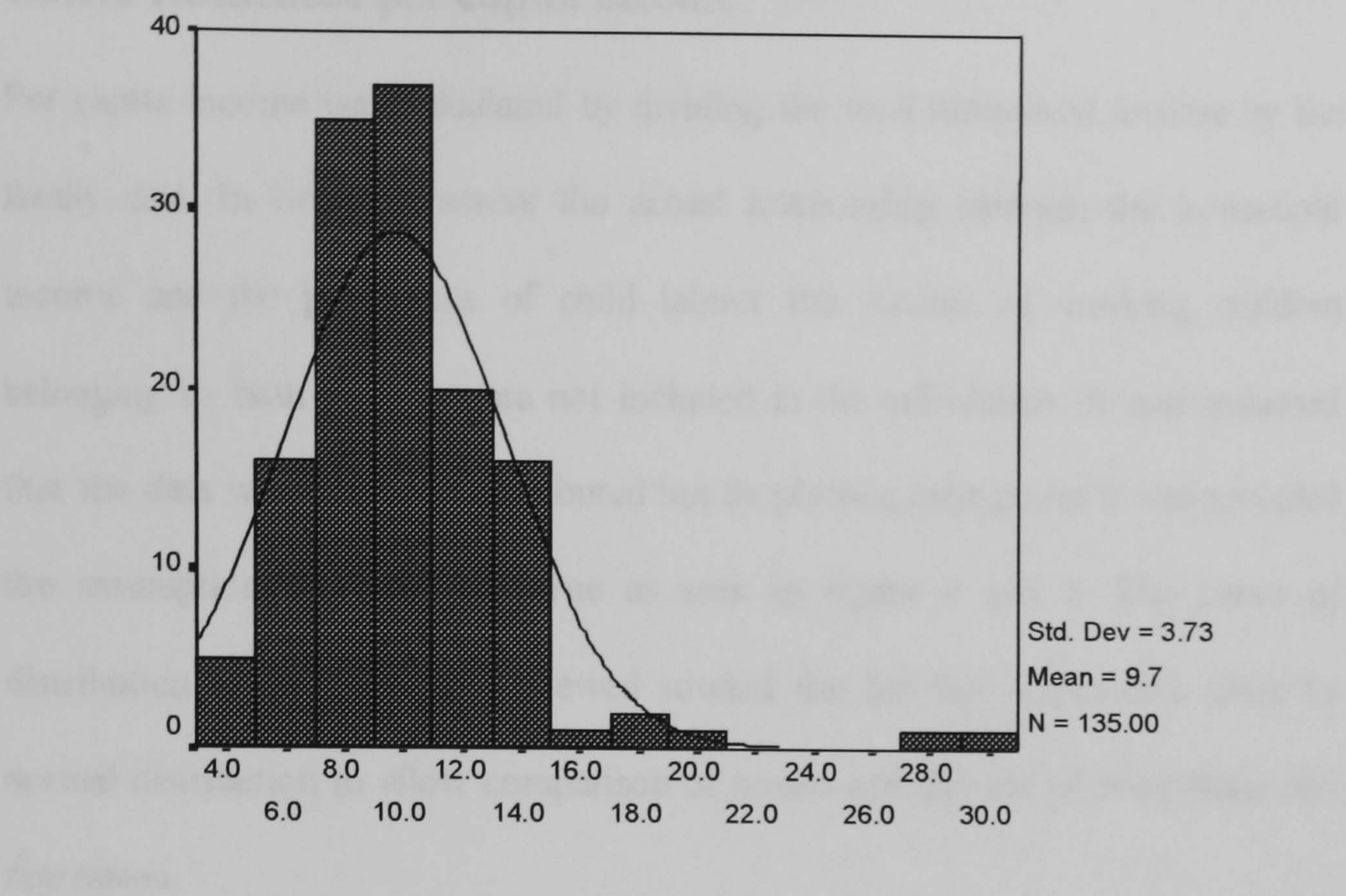
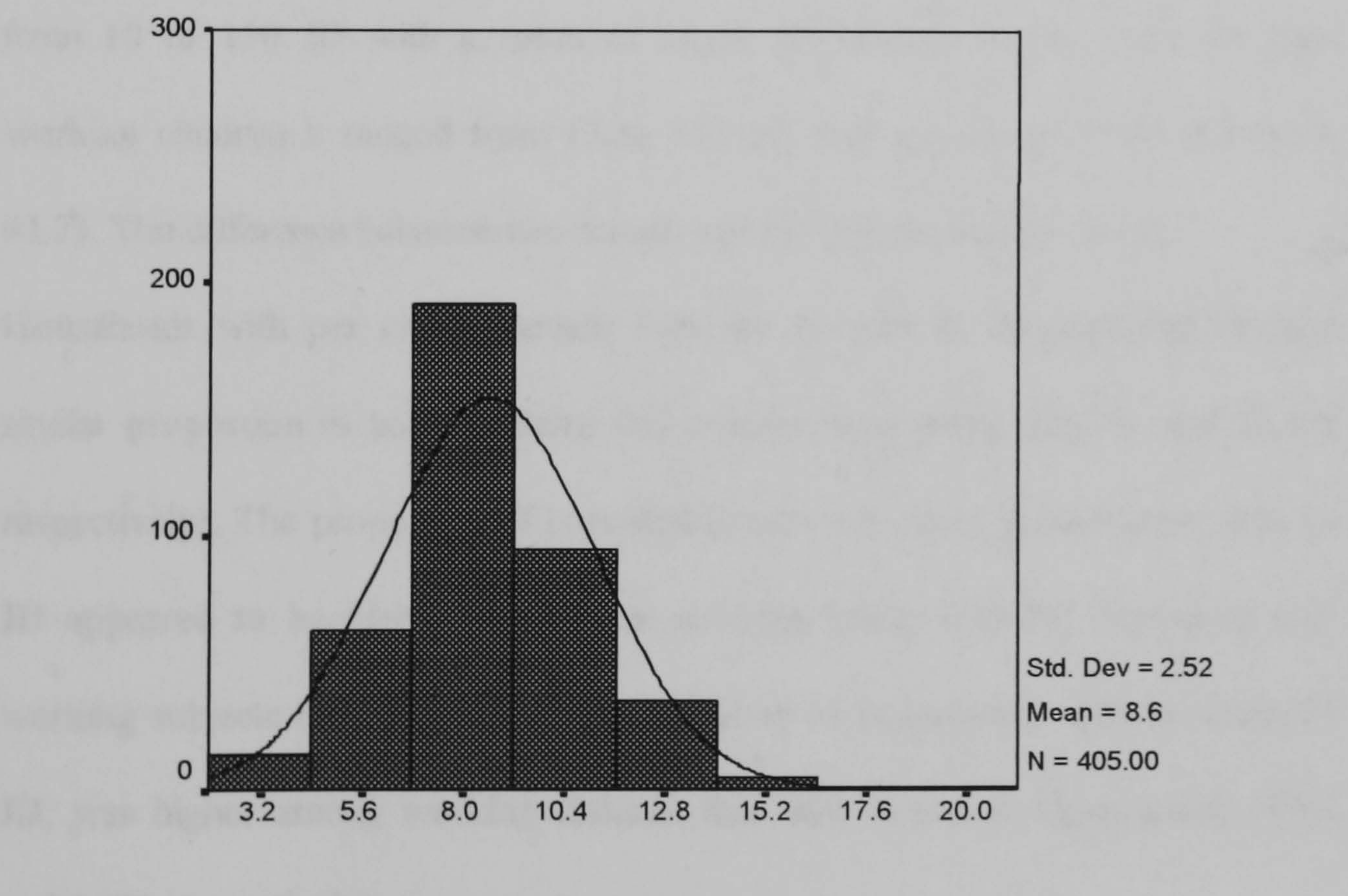


Figure 3. Family size of non-working children





### **6.2.1.2 Household per capita income:**

Per capita income was calculated by dividing the total household income by the family size. In order to assess the actual relationship between the household income and the prevalence of child labour the income of working children belonging to both groups were not included in the calculation. It was assumed that the data were normally distributed but by plotting histograms it was revealed the assumption was not fully true as seen in figure 4 and 5. The curve of distribution appeared slightly skewed toward the left but sufficiently close to normal distribution to allow comparison of means and the use of correlation and regression.

Table 19 shows that the household per capita income of working subjects ranged from 10 to 150 JD with a mean of 36.44 (CI=32.86, 39.94) while for non-working children it ranged from 13 to 333 JD with a mean of 39.45 (CI=37.3, 41.7). The difference between two means was not significant ( $p = 0.15$ ).

Households with per capita income between 21 and 41 JD appeared to have similar proportion in both working and non-working group (50.3% and 52.8% respectively). The proportion of households with per capita income more than 41 JD appeared to be higher among non-working group (38.8%) compared with working subjects (26.7%), while the proportion of households, with less than 21 JD, was higher among working children than that of non-working group (23% and 8.4% respectively).

Most working and non-working children (91.1 and 92.6% respectively) came from households with per capita income less than the Jordanian average (64JD). [Department of Statistics, 1997] The difference between the two groups was not statistically significant (OR=0.82(CI=0.39, 1.76, p=0.58)) (table 20).



Figure 4 per capita income of working children

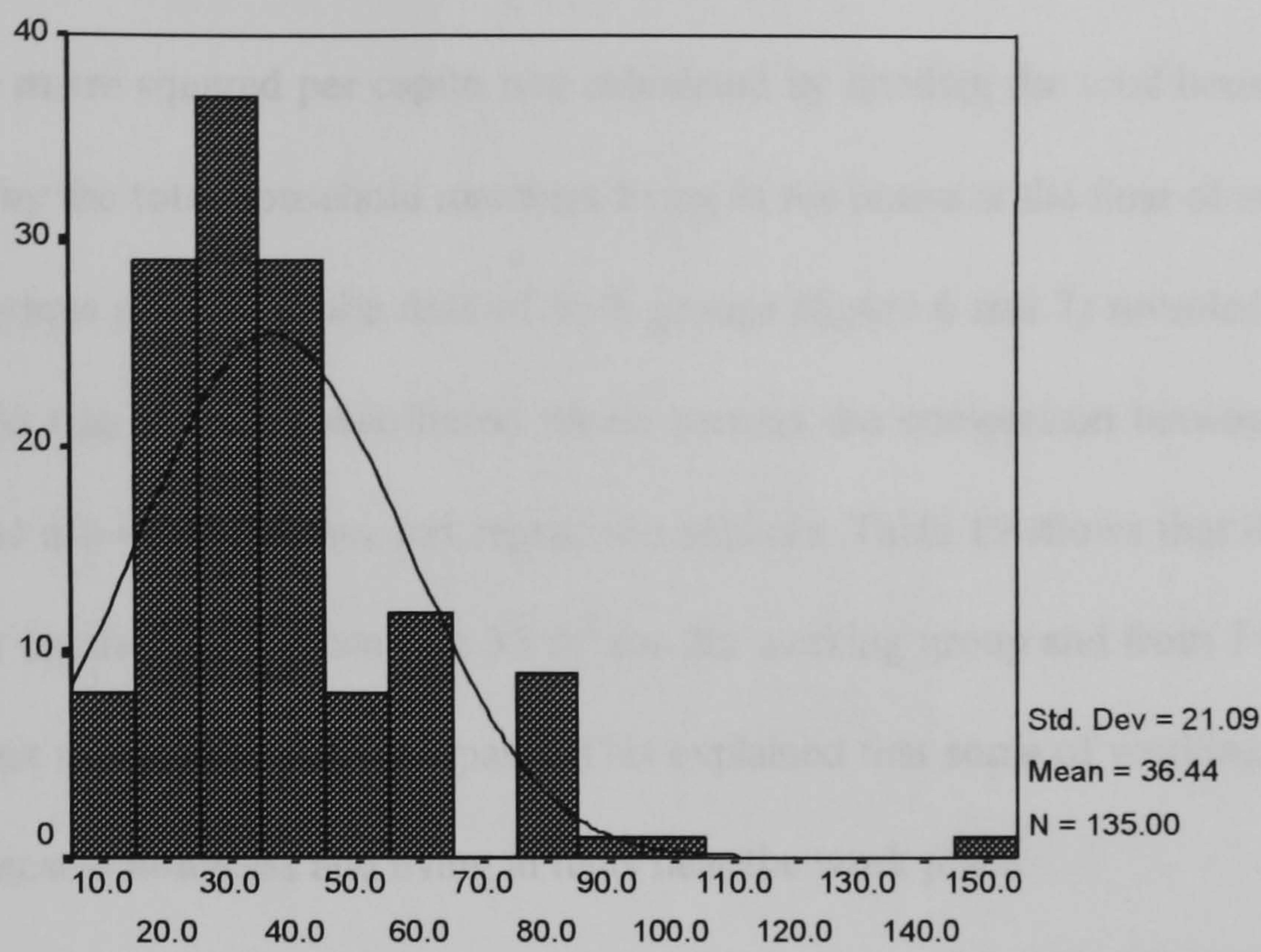
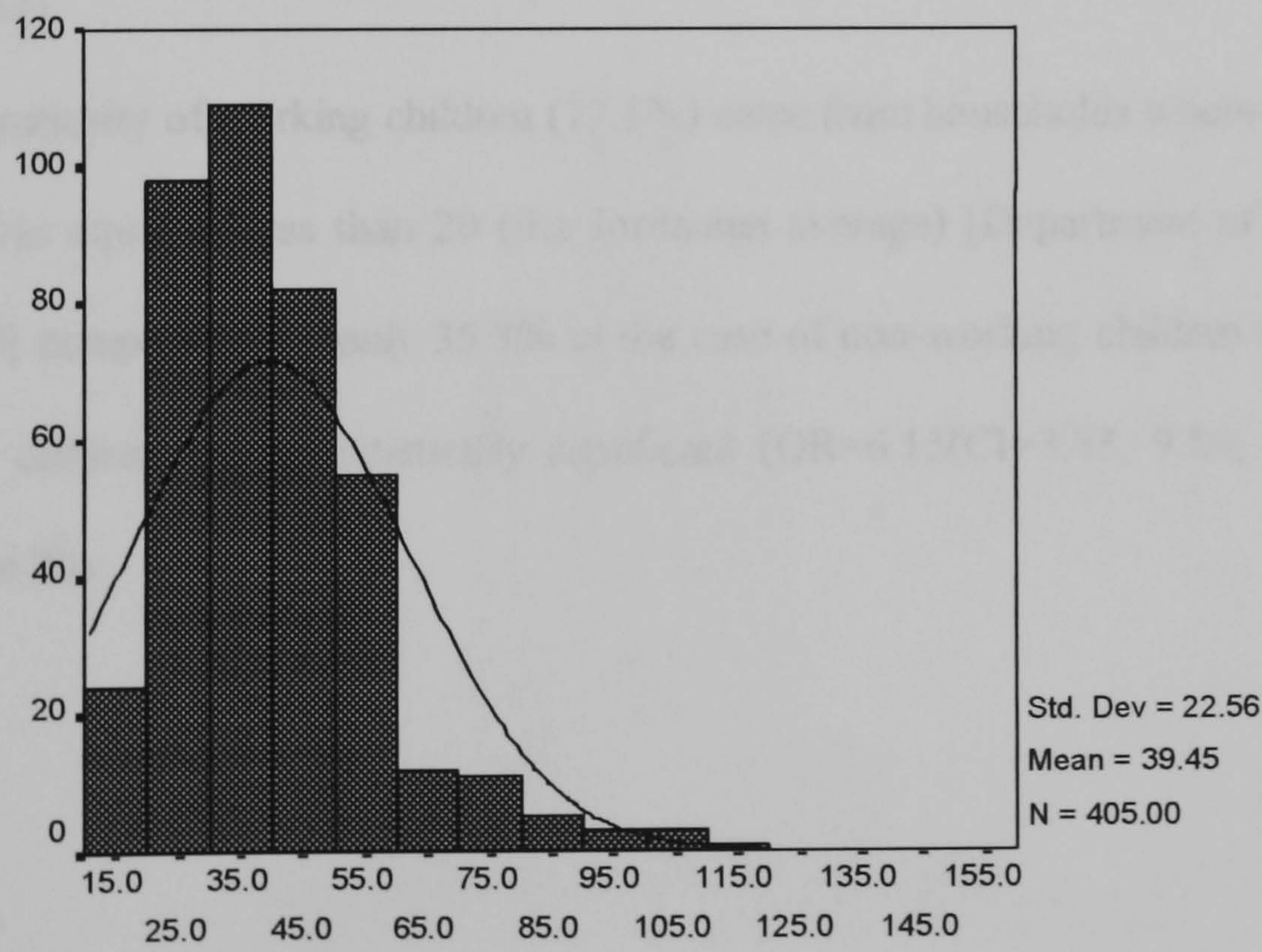


Figure 5 per capita income of non-working children





### **6.2.1.3 House metre squared per capita:**

House metre squared per capita was calculated by dividing the total house square metre by the total household members living in the house at the time of interview. Histograms plotted on the data of both groups (figure 6 and 7) revealed that the variable was normally distributed which permits the comparison between means and the use of correlation and regression analysis. Table 19 shows that the house m<sup>2</sup> per capita ranged from 0 to 35 m<sup>2</sup> for the working group and from 7 to 42 m<sup>2</sup> for their non-working counterparts. This explained that some of working children families was homeless and living in tents near the work place.

The mean m<sup>2</sup> per capita of non-working children (mean=17.6(CI=17.09, 18.11)) was significantly higher than that of working children (mean=15.6(CI=14.44, 16.76)).

The majority of working children (77.1%) came from households where per capita m<sup>2</sup> was equal or less than 20 (the Jordanian average) [Department of Statistics, 1997] compared with only 35.3% in the case of non-working children (table 19). This difference was statistically significant (OR=6.15(CI=3.83, 9.89, p=0.000)) (table 20).



Figure 6. House area (m<sup>2</sup>) per capita of working children

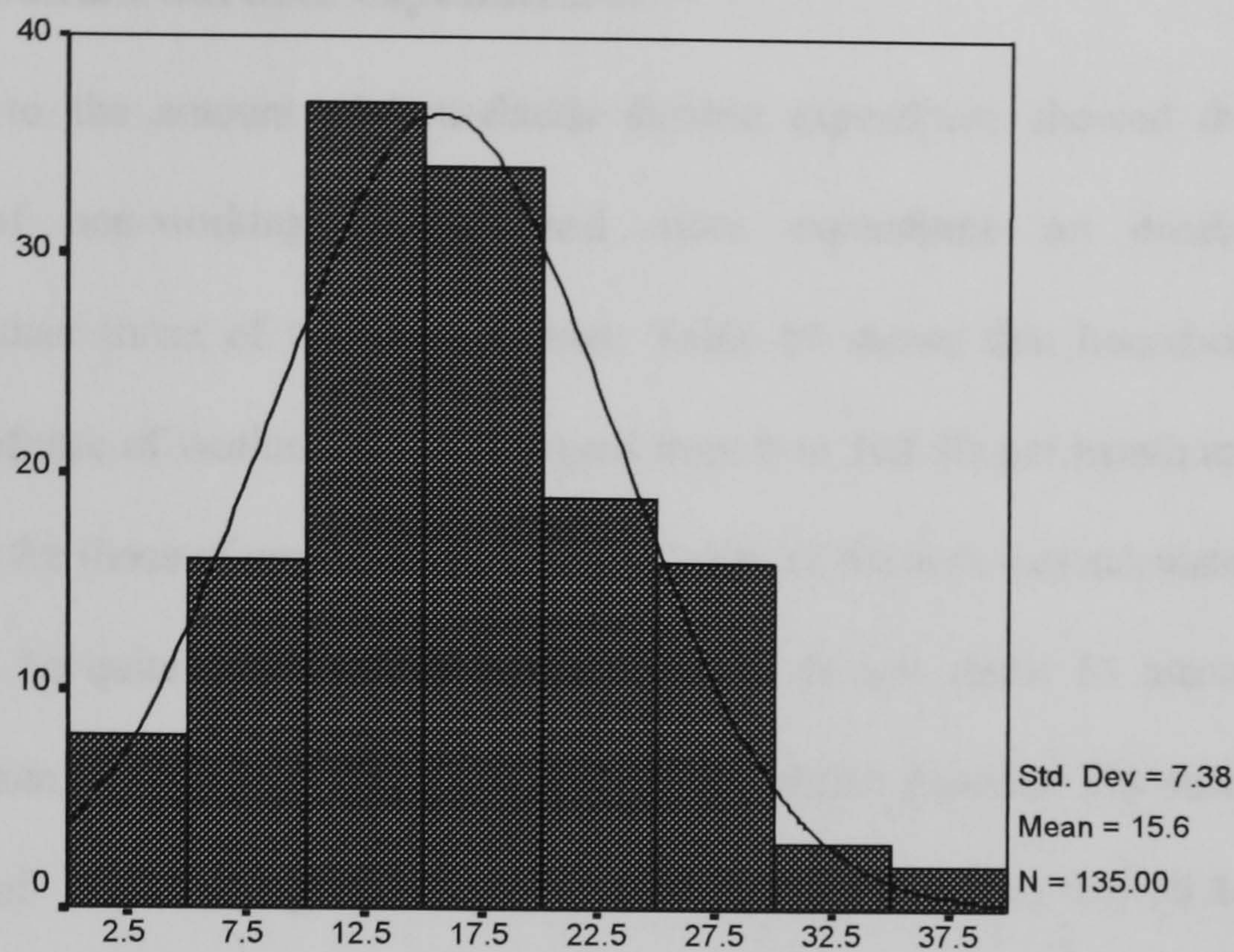
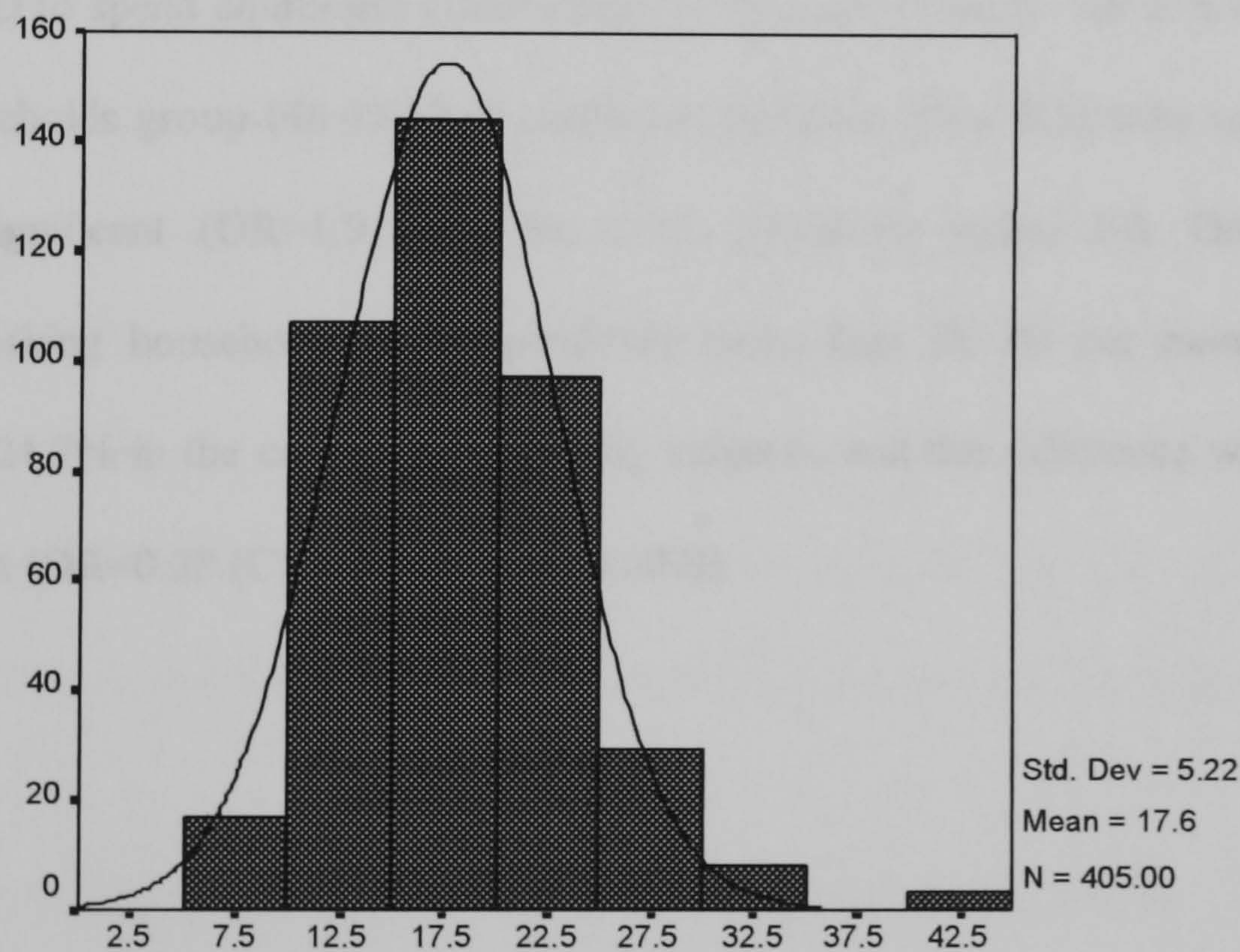


Figure 7. House area (m<sup>2</sup>) per capita of non-working children





#### **6.2.1.4 Household durable expenditure:**

Data related to the amount of households durable expenditure showed that households of non-working children had more expenditure on durable commodities than those of working children. Table 19 shows that household durable expenditure of working children ranged from 0 to 108 JD per month and from 0 to 140 for those of non-working group. Median of the data was calculated and found to be quite different between the groups. It was about 14 among working children while it was about 24 among non-working children. The mean expenditure of non-working children's households (mean=38.8 (CI=35.24, 42.36)) was higher compared with the working group (mean=24.5 (CI=20.08, 28.92)). Approximately two thirds (64.4%) of working children households had less than 15 JD to spend on durable commodities while approximately half of non-working households group (48.6%) had similar expenditure. This difference was statistically significant (OR=1.91(CI=1.26, 2.92, p=0.001)) (table 20). Only 11.1% of working households had expenditure more than 36 JD per month compared to 24.7% in the case of non-working subjects, and this difference was also significant (OR=0.38 (CI=0.20, 0.70, p=0.000)).



### **6.2.1.5 Occupation of the head of the family:**

Occupation of the head of the family among both groups in the study was scored from 0 to 5 (see page 148). The family heads were categorised into three groups. The first group was the unskilled workers where the scores of their occupations were between 0.5 and 1.9. The second group was the semiskilled; their occupation scores were between 2 and 2.8. The third group was the skilled people; their occupation scores were more than 2.8.

Histograms plotted on the data revealed that the variable was normally distributed as seen in figure 8 and 9 allowing comparison between means. Table 19 shows that the occupation score of working children families heads ranged from 0 to 3 while, in non- working group, the score ranged from .5 to 4.5.

The mean score among non-working children (mean=2.25(CI=2.07, 2.23)) was significantly higher than that of working children (mean=1.86(CI=1.75, 1.97)). Working and non-working children had similar proportion of semi-skilled family heads (37.8 and 37% respectively). Non-working children had a higher proportion of skilled family heads (23%) than working children (5.2%). This picture appeared to be inverted regarding the unskilled category where working children had higher proportion (57%) of unskilled family heads compared with non-working subjects (39.7%).

Table 20 shows that the proportion of unskilled family heads was significantly higher among working compared to non-working children (OR=2.01, (CI=1.33,

3.04,  $p=0.000$ )), while the skilled group was significantly higher among the family heads of non-working children ( $OR=0.18$  ( $CI=0.07, 0.42$ ,  $p=0.000$ )).



Figure 8 Head of family occupation weight of working children

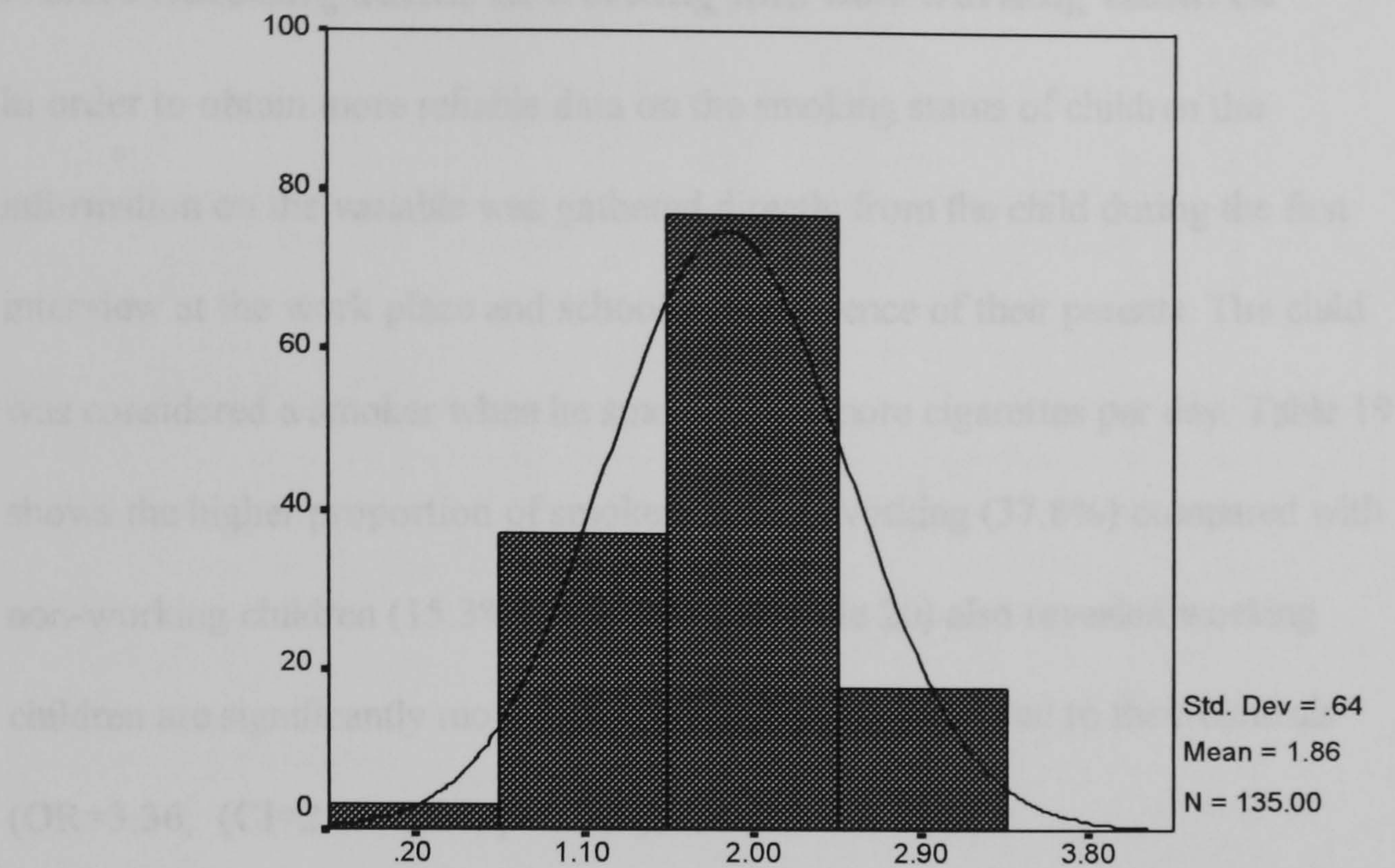
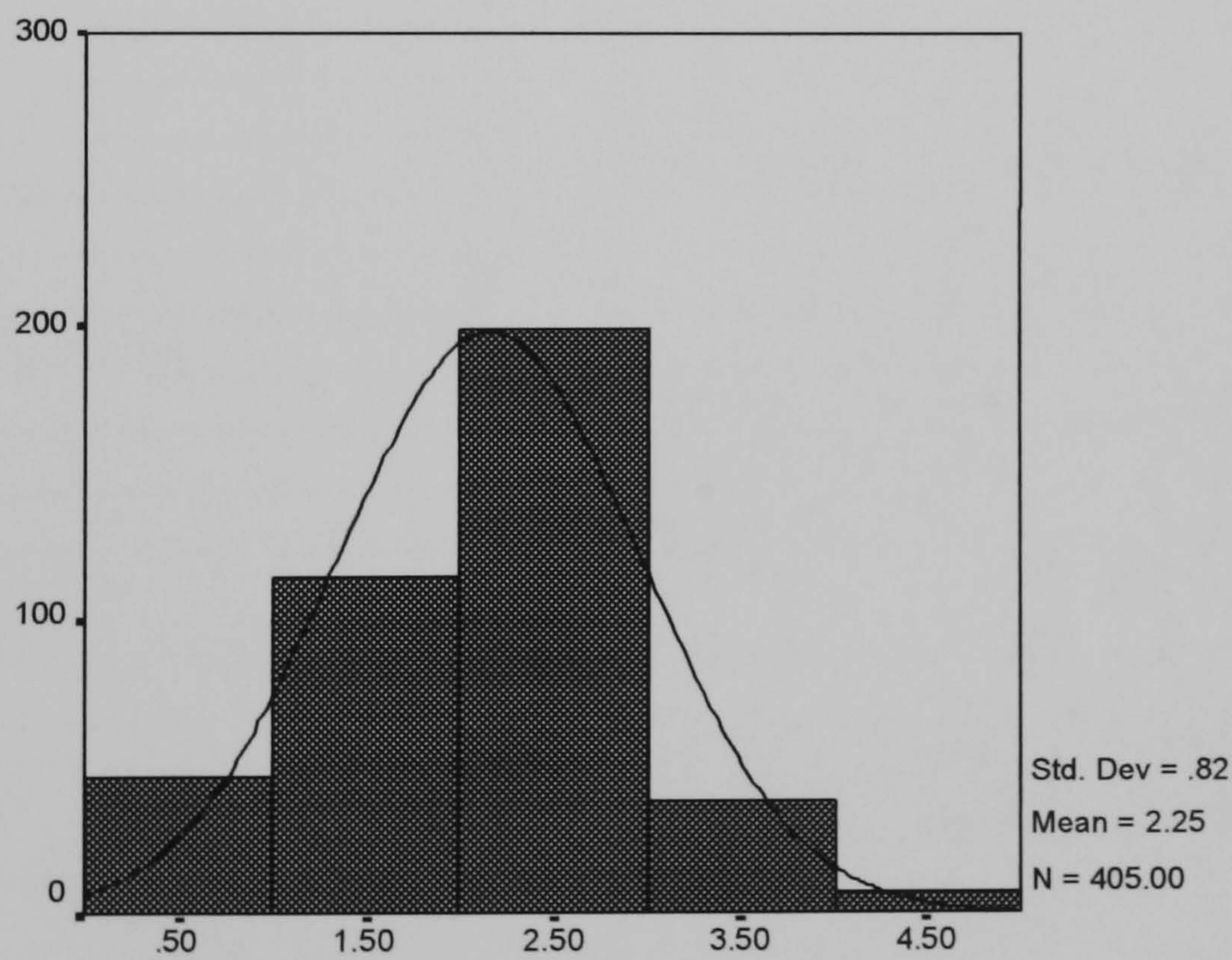


Figure 9 Head of family occupation weight of non-working children





#### **6.2.1.6 Smoking status in working and non-working children**

In order to obtain more reliable data on the smoking status of children the information on the variable was gathered directly from the child during the first interview at the work place and school in the absence of their parents. The child was considered a smoker when he smoked 5 or more cigarettes per day. Table 19 shows the higher proportion of smokers among working (37.8%) compared with non-working children (15.3%). The analysis (table 20) also revealed working children are significantly more likely to be smokers compared to their controls (OR=3.36, (CI=2.11, 5.34, p=0.000)).

Table 19. Socio-economic profile of working and non-working children

	Working		Non-working	
<b>Family size (household members)</b>	Count	(%)	Count	(%)
≤ 4	5	(3.70)	14	(3.50)
5-6	16	(11.9)	63	(15.6)
7-10	72	(53.3)	247	(61.0)
>10	42	(31.1)	81	(20.0)
Mean (C.I)	9.7** (9.07, 10.33)		8.7 (8.45, 8.95)	
Range	4 – 30		3 - 21	
<b>per capita income (JD)</b>				
≤20	31	(23.0)	34	(8.4)
21- 41	68	(50.3)	214	(52.8)
42- 63	24	(17.8)	127	(31.4)
≥64	12	(8.9)	30	(7.4)
Mean (C.I)	36.44 (32.86, 39.94)		39.45 (37.30, 41.70)	
Range	10 – 150		13 - 333	
<b>House m2 per capita</b>				
≤ 10	34	(25.2)	35	(8.6)
11 - 20	70	(51.9)	108	(26.7)
> 20	31	(23)	262	(64.7)
mean (C.I)	15.6 (14.44, 16.76)		17.6** (17.09, 18.11)	
range	0 – 35		7 - 42	
<b>Household durable expenditure(JD)</b>				
0 - 14	87	(64.4)	197	(48.6)
15 - 36	33	(24.4)	108	(26.7)
> 36	15	(11.1)	100	(24.7)
Mean (C.I)	24.5 (20.08, 28.92)		38.8 ** (35.24, 42.36)	
Median	14		24	
Range	0 – 108		0 - 140	
<b>head family occupation</b>				
Unskilled	77	(57.0)	161	(39.8)
Semiskilled	51	(37.8)	150	(37.0)
Skilled	7	(5.2)	94	(23.2)
Mean of score (C.I)	1.86 (1.75, 1.97)		2.25** (2.07, 2.23)	
Range of score	0 – 3		5 - 4.5	
<b>Smoking status</b>				
Smoking	51	(37.8)	62	(15.3)
Non-smoking	84	(62.2)	343	(84.7)

\*\*Significant at the 0.01 level (2-tailed).

Table 20. Comparison of demographic and socio-economic variables among working and non-working children

Variable	Working	Non-working	Odd ratio (CI)	P value
<b>Family size</b>				
<7	21	77	0.78 (0.45, 1.37)	0.37
≥7	114	328		
<b>Per capita income</b>				
< 64	123	375	0.82 (0.39, 1.76)	0.58
≥ 64	12	30		
<b>House m2 per capita</b>				
≤20	104	143	6.15 (3.83, 9.89)	0.000
>20	31	262		
<b>Head-family occupation</b>				
Unskilled	77	161	2.01 (1.33, 3.04)	0.000
Semi-skilled	51	150	1.03 (0.68, 1.57)	0.87
Skilled	7	94	0.18 (0.07, 0.42)	0.000
<b>Household expenditure</b>				
<15	87	197	1.91 (1.26, 2.92)	0.001
15-36	33	108	0.89 (0.55, 1.43)	0.61
>36	15	100	0.38 (0.20, 0.70)	0.000
Non-smoking	84	343	3.36 (2.11, 5.34)	0.000
Smoking	51	62		

6.2.1.7 Education of father and mother:

The education level of parents was categorised into three levels as shown in table 21. Illiteracy means that parent did not receive any kind of informal or formal education. School education level includes primary and/or secondary education, while higher education includes college and/or university education.

The illiteracy rate among working children’s fathers (8.9%) was slightly higher than that of non-working subjects (7.4%). Most of working children’s fathers (83.7%) achieved only primary or secondary school education while fewer fathers



of non-working children (63.5%) achieved a similar education level. The difference was statistically significant ( $OR=2.96(CI=1.75, 5.03)$ ) (table 21).

Twenty nine percent of fathers of non-working children achieved higher education levels (Diploma, 1st Degree, Masters or Ph.D.) while only 7.4% of fathers of working children achieved these levels. This difference was also statistically significant ( $OR=0.19(CI=0.09, 0.40)$ ) (table 21).

The illiteracy rate among the mothers of working children appeared to be slightly higher, but not significant, compared with that of non-working children's mothers (26.7% and 21.2% respectively). Equal proportions (65.9%) of mothers achieved only the school education (primary or secondary education), while a higher proportion of non-working mothers achieved higher education levels compared with those of working subjects (12.8 and 7.4% respectively). This difference was statistically significant ( $OR=0.19(CI=0.09, 0.30)$ ) (table 21).

Illiteracy rates among fathers and mothers of working and non- working children appeared to be higher than male and female illiteracy rates in Jordan (6.5 and 18.4 respectively). [Ministry of Health, 1999]

Table 21 Education levels of working and non-working children parents

	Working		Non-working			
Father education	Count	%	Count	%	Odd ratio (CI)	p value
Illiterate	12	8.9	30	7.4	1.22 (0.57, 2.57)	0.58
School education	113	83.7	257	63.5	2.96 (1.75, 5.03)	0.000
Higher education	10	7.4	118	29.0	0.19 (0.09, 0.40)	0.000
Mother education						
Illiterate	36	26.7	86	21.2	1.35 (0.84, 2.16)	0.19
School education	89	65.9	267	65.9	1.00 (0.65, 1.54)	1.00
Higher education	10	7.4	52	12.8	0.19 (0.09, 0.30)	0.000

## **6.2.2 Health variables analysis:**

This section describes anthropometric indicators (height for age z score, weight for age z score, skinfold thickness), packed cell volume, peak expiratory flow rate, psychosocial status and the prevalence of health problems in order to detect significant differences between working and non-working children. Proportions, means with 95% confidence intervals (95% CIs) and range were calculated for each variable as shown in table 21. Histograms were fitted for weight and height z scores to assess the normality of distribution of data among both groups in the study. Comparison between means (*t*-test) was performed when the distribution of the data was close enough to normality. Odd Ratios were also calculated when there was a clear standard cut off point. For example, OR was calculated to assess the difference between working and non-working children with weight and height below and above 0 z score of the British standard, while in the case of PCV the cut off point for comparison was 36 which is the WHO cut off point for anaemia. [UNICEF, 1994]

### **6.2.2.1 Anthropometrics (height and weight z scores)**

Height and weight are expressed as z score using LMS software based on UK standards. [LMS, 1998] In order to use and compare means of weight and height z scores between the two study groups, histograms were plotted to assess the normality of the variables. The data were found to be sufficiently normally



distributed for the use of t-test, regression and correlation as shown in figures 10&11 and figures 12&13. Weight z score ranged between -2.96 and 2.32 in the case of working children and between -1.75 and 2.32 for non-working children. The mean weight z score of non-working children (mean=0.25 CI=0.18, 0.32) was significantly higher compared to that of working group (mean=-0.08 CI=-0.27, 0.11) at the level  $p=0.01$  (table 22).

The proportion of children who had weight z scores  $\geq 0$  was higher among non-working compared with working children (60.3% and 54% respectively). but statistically this difference was not significant (OR=0.78 (CI=0.51, 1.17)) (table23).

Working children (23.82%) were significantly more likely to have a weight z score less than -1SD compared with non-working counterparts (2.2%) (OR=13.67 (CI=6.02,31.9)) (table 23). Malnourished children (those falling below -2 z score) formed about 5.3% of working children while there were none among non-working children.

Height z score of working children ranged between -4.12 and 2.35 and between -2.7 and 2.13 for non-working children. The mean height z score of working children was -0.37 (CI=-0.57, 0.17) of the mean for UK children, while non-working group had a mean of 0.17(CI=0.10, 0.24). This difference was statistically significant ( $p < 0.001$ ) (table 22).

Approximately two thirds (63%.) of non-working children had height z scores  $\geq 0$ , while less than half (43.7%) of working children had similar scores.

The difference between those proportions was statistically significant (OR=0.46 (CI= 0.30, 0.69)) (table 23). Working children were more likely to have height z score less than  $-1$ SD compared with their non-working counterparts (OR=8.55 (CI=4.64,15.73)) (Table 23). The proportion of working children (9.6%) who fell below  $-2$ SD was higher than non-working subjects (0.2%).



Figure 10. Weight z score of working children

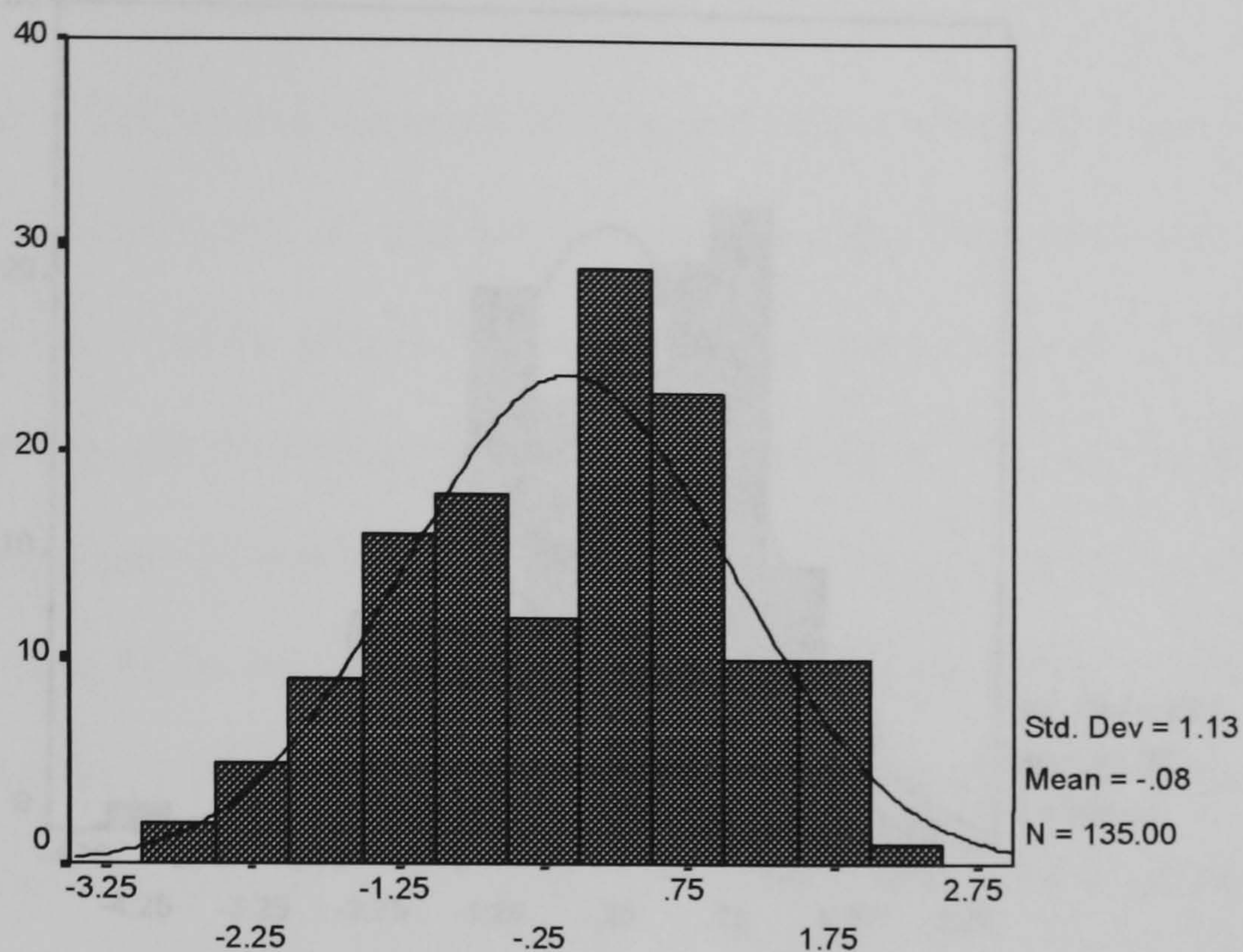


Figure 11. Weight z score of non-working children

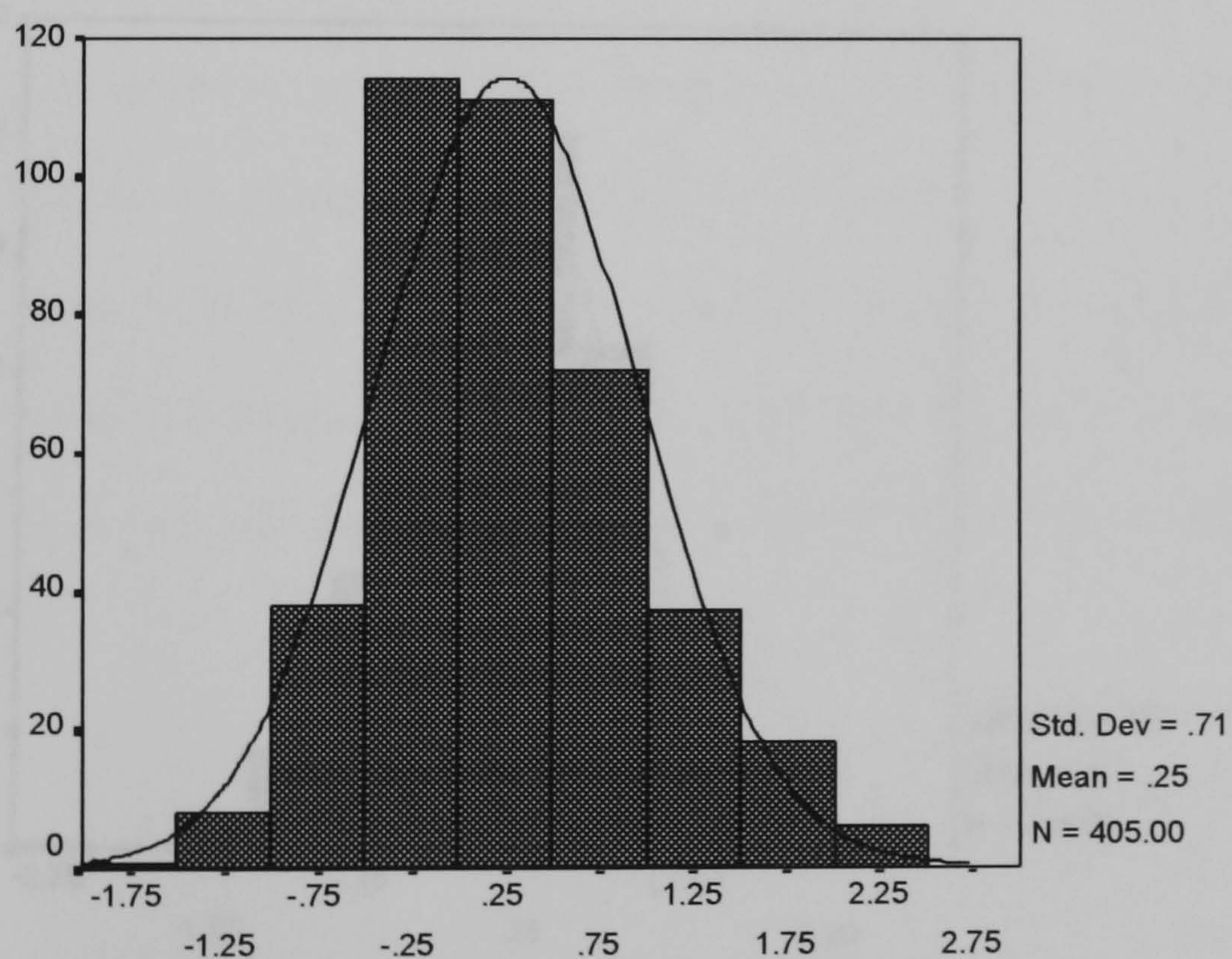




Figure 12. Height z scores of working children

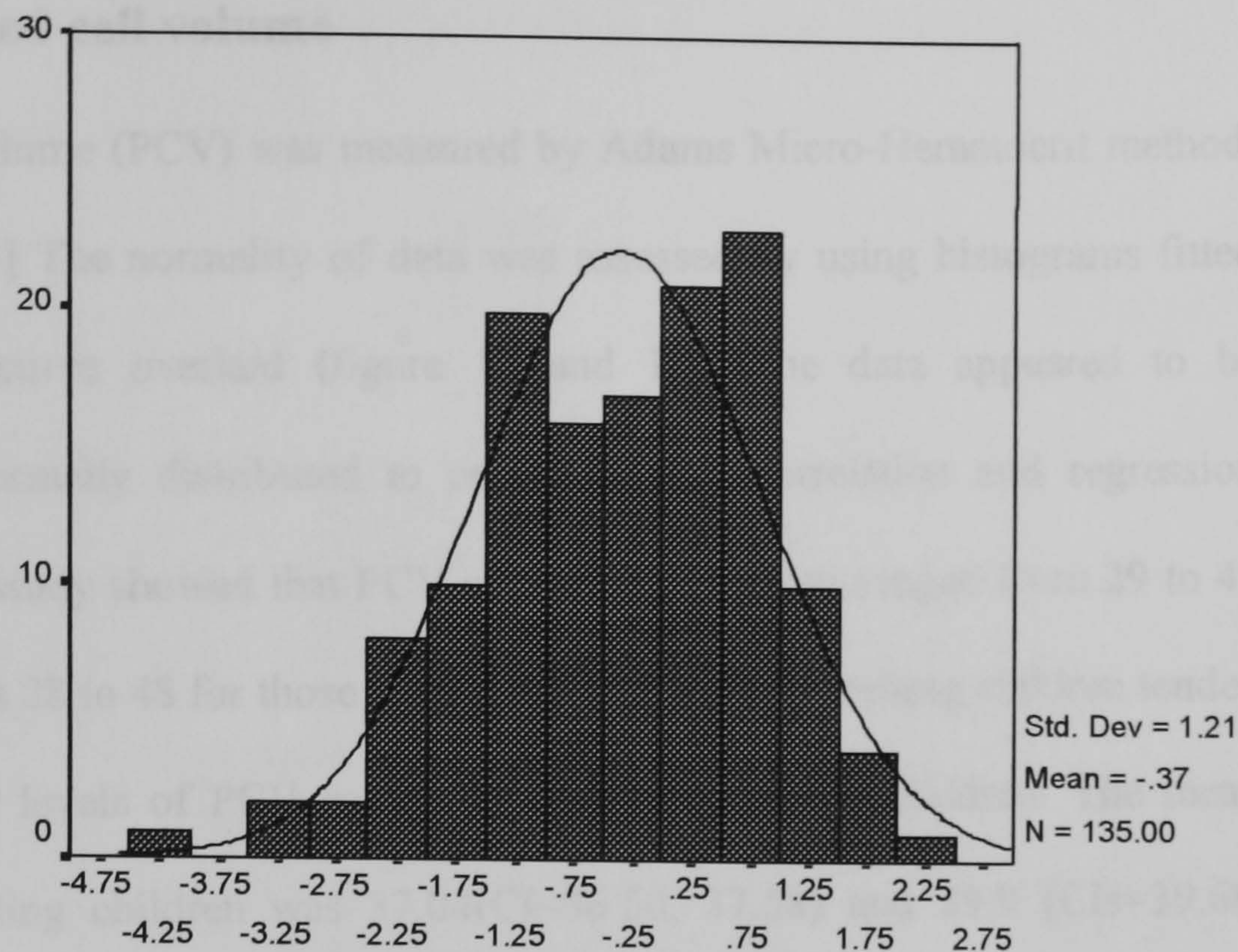
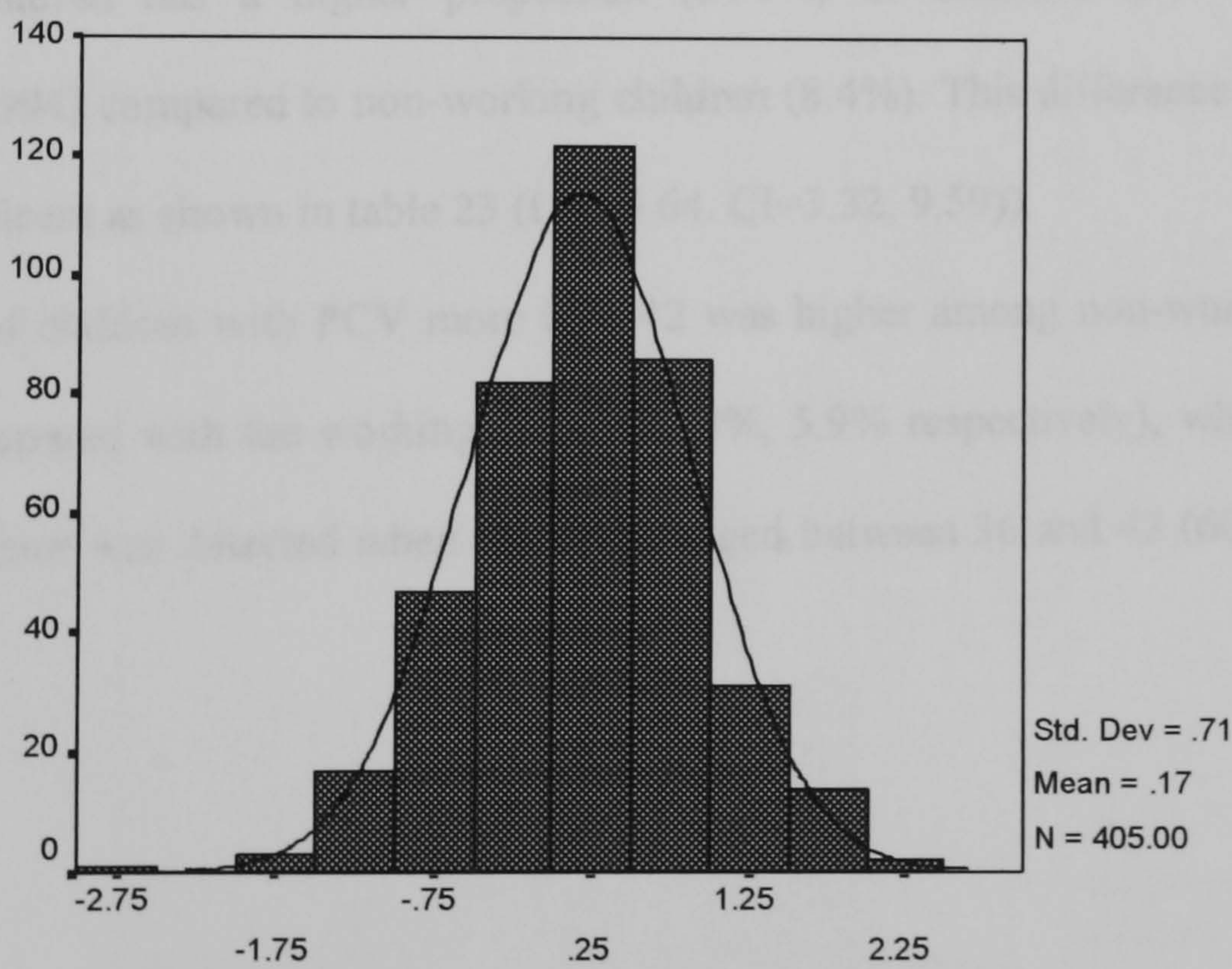


Figure 13. Height z scores of non-working children





### 6.2.2.2 Packed cell volume

Packed cell volume (PCV) was measured by Adams Micro-Hematocrit method. [Seiverd, 1983] The normality of data was assessed by using histograms fitted with normal curve overlaid (figure 14 and 15). The data appeared to be sufficiently normally distributed to conduct *t*-test, correlation and regression analysis. The study showed that PCV of working children ranged from 29 to 47 compared with 28 to 48 for those non-working subjects. Working children tended to have lower levels of PCV compared with non-working children. The mean PCV of working children was 37.04(CI=36.50, 37.58) and 39.9 (CIs=39.68, 40.30) among the non-working group. The difference between means was statistically significant ( $p < 0.001$ ) (table 22)

Working children has a higher proportion (34.1%) of anaemia (PCV<36) [UNICEF, 1994] compared to non-working children (8.4%). This difference was highly significant as shown in table 23 (OR=5.64, CI=3.32, 9.59)).

Proportion of children with PCV more than 42 was higher among non-working children compared with the working group (23.4%, 5.9% respectively), while a small difference was detected when the PCV ranged between 36 and 42 (60 and 68.2%).



Figure 14. Packed Cell Volume of working children

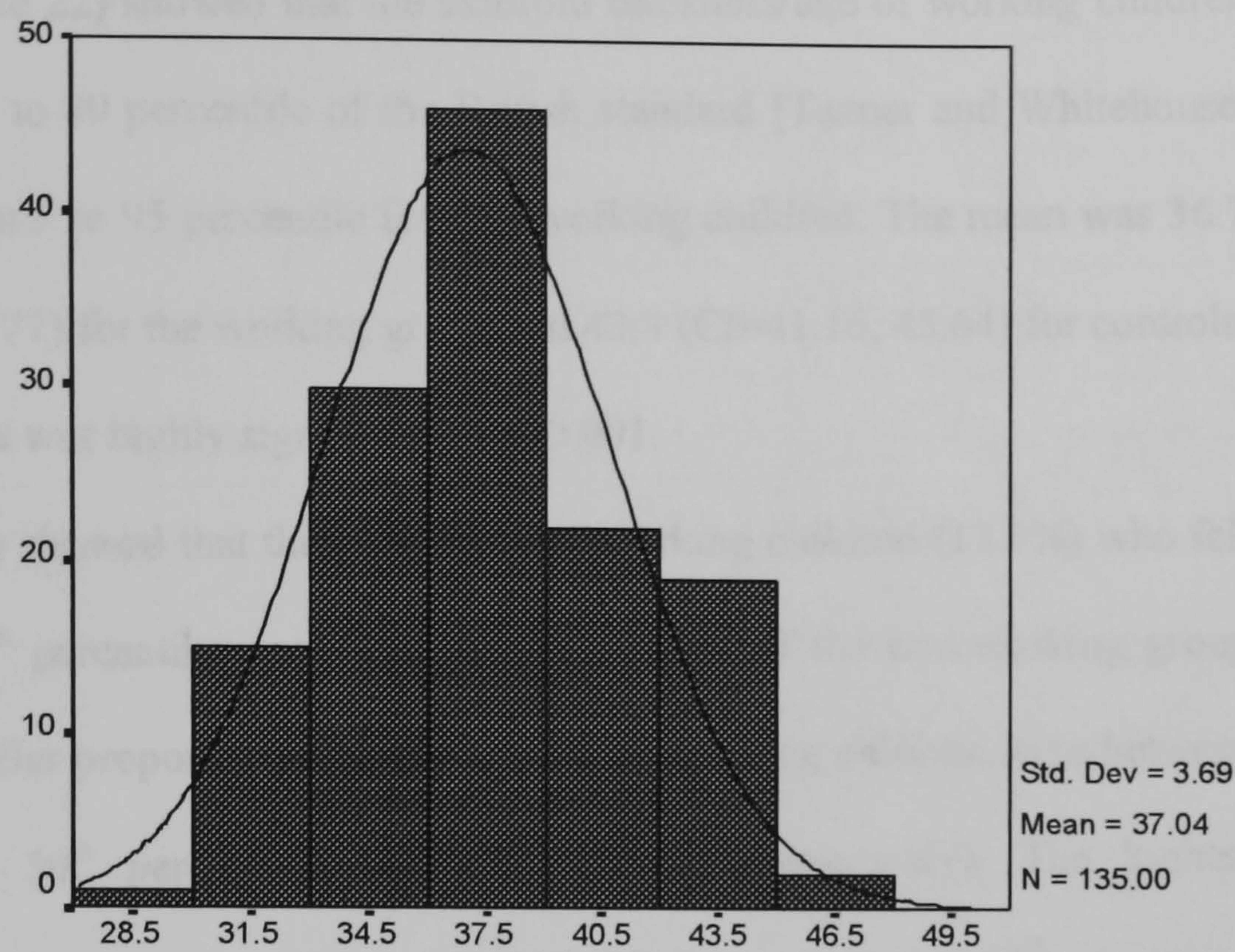
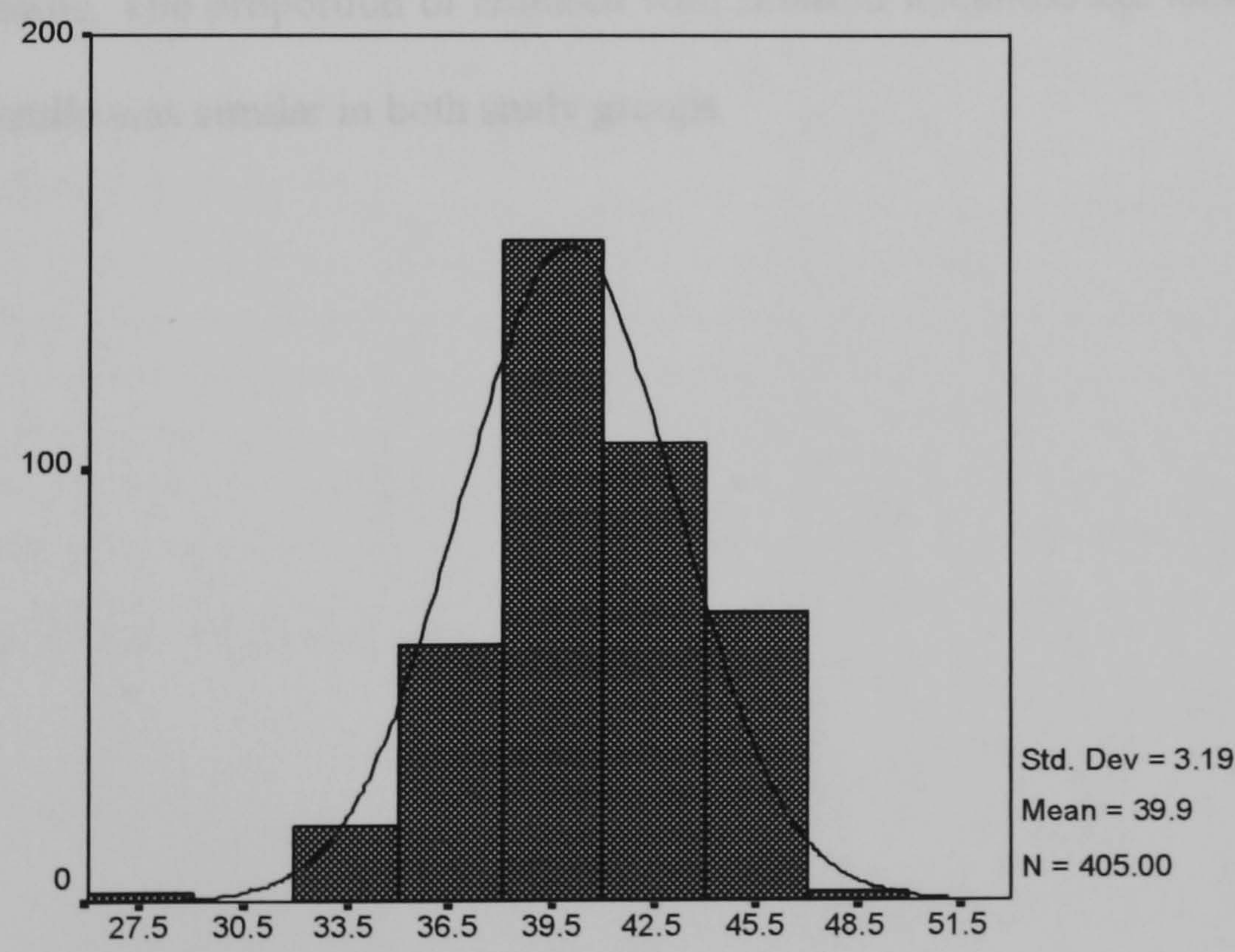


Figure 15. Packed Cell Volume of non-working children





### **6.2.2.3 Skinfold thickness/age percentile:**

The study (table 22) showed that the skinfold thickness/age of working children ranged from 5 to 89 percentile of the British standard [Tanner and Whitehouse, 1985] and from 5 to 95 percentile for non-working children. The mean was 36.7 (CI=32.63, 40.77) for the working group and 43.4 (CI=41.16, 45.64) for controls. This difference was highly significant at  $p=0.001$ .

The study also showed that the proportion of working children (13.3%) who fell below the 10<sup>th</sup> percentile was more than twice that of the non-working group (6.2%). A similar proportion of working and non-working children were between the 10<sup>th</sup> and 50<sup>th</sup> percentiles (56.3 and 58.1% respectively). The highest proportion among working children (31.9%) fell between 10 and 25<sup>th</sup> percentile, while the highest proportion (35.1%) of non-working group fell between the 26<sup>th</sup> and 50<sup>th</sup> percentile. The proportion of children with skinfold thickness/age more than 50<sup>th</sup> percentile was similar in both study groups.

Table 22. Characteristics of health variables among working and non-working children

	Working		Non-working	
Wt z score level	count	(%)	count	(%)
>(1 z score)	21	15.5	61	15.1
0 to 1 z score	52	38.5	183	45.2
<0 to –1 z score	30	22.2	152	37.5
<1 to –2 z score	25	18.5	9	2.2
<-2 z score	7	5.3		
Mean (C I)	-0.08 (-0.27 , .11)		.25** (0.18, .32) ?	
Range	-2.96 to 2., 32		-1.75 to 2.32	
Ht z score level				
>(1 z score)	15	11.1	47	11.6
0 to 1 z score	44	32.6	208	51.4
<0 to –1 z score	33	24.4	129	31.9
<1 to –2 z score	30	22.3	20	4.9
<-2 z score	13	6.6	1	0.2
Mean (C I)	-.37 (-0.57 , 0.17 )		.17** (0.10 , 0.24)	
Range	-4.12 to 2.35		-2.7 to 2.13	
Packed cell volume				
< 36	46	34.1	34	8.4
36 – 42	81	60	277	68.2
> 42	8	5.9	94	23.4
Mean (CI)	37.04 (36.5 , 37.58)		39.9** (39.68, 0.3)	
Range	29 to 47		28 to 48	
Skinfold thickness percentile				
<10	18	13.3	25	6.2
10-25	43	31.9	93	23.0
26-50	33	24.4	142	35.1
51-75	29	21.5	95	23.5
>75	12	8.9	50	12.3
Mean (CI)	36.7 (32.63, 40.77)		43.4** (41.2, 45.6)	
Range	5 to 89		5 to 95	

\*\*Significant at the 0.01 level (2-tailed).

Table 23 Working and non-working children distributed by different levels of wt for age z score, ht for age z-score and PCV.

	Working	Non-working	Odds ratio (CI)	p value
<b>Wt z score level</b>	Count	count		
≥0 z score	73	244	0.78 (0.51 , 1.17)	0.207
<0 to (-1 z score)	30	152		
< (-1 z score)	32	9	13.67 (6.02, 31.9)	<0.001
<b>Ht z score level</b>				
>0 z score	59	255	0.46 (0.30, 0.69)	<0.001
<0 to (-1 z score)	33	129		
< (-1 z score)	43	21	8.55 (4.67, 15.73)	<0.001
<b>PCV level</b>				
< 36	46	34	5.64 (5.32, 9.59)	<0.001
≥ 36	89	371		



#### **6.2.2.4 Peak Expiratory Flow Rate/height (PEFR/ht):**

Data on the PEFR of both study groups were sufficiently normally distributed to conduct t-test, correlation and regression analysis as shown in figures 16 and 17

The study showed (table 24) that the mean PEFR/ht of working children was 2.49 (CI=2.44, 2.57) with a range of 1.9 to 3.5 while the mean among non-working children was 2.57 (CIs=2.54, 2.6) and the range was between 1.63 and 3.5. A statistically significant difference between the means of PEFR/ht of working and non-working children was detected ( $t=-2.55$ ,  $p=0.011$ ).

The mean PEFR/ht of working children was lower than that of the control group in all age groups. There was no statistically significant difference between the means except between the youngest children of both working and non-working children (11-12) where the mean was significantly higher in the control group compared with working subjects ( $p<0.001$ ).



Figure 16. Peak Expiratory Flow Rate/ht of working children

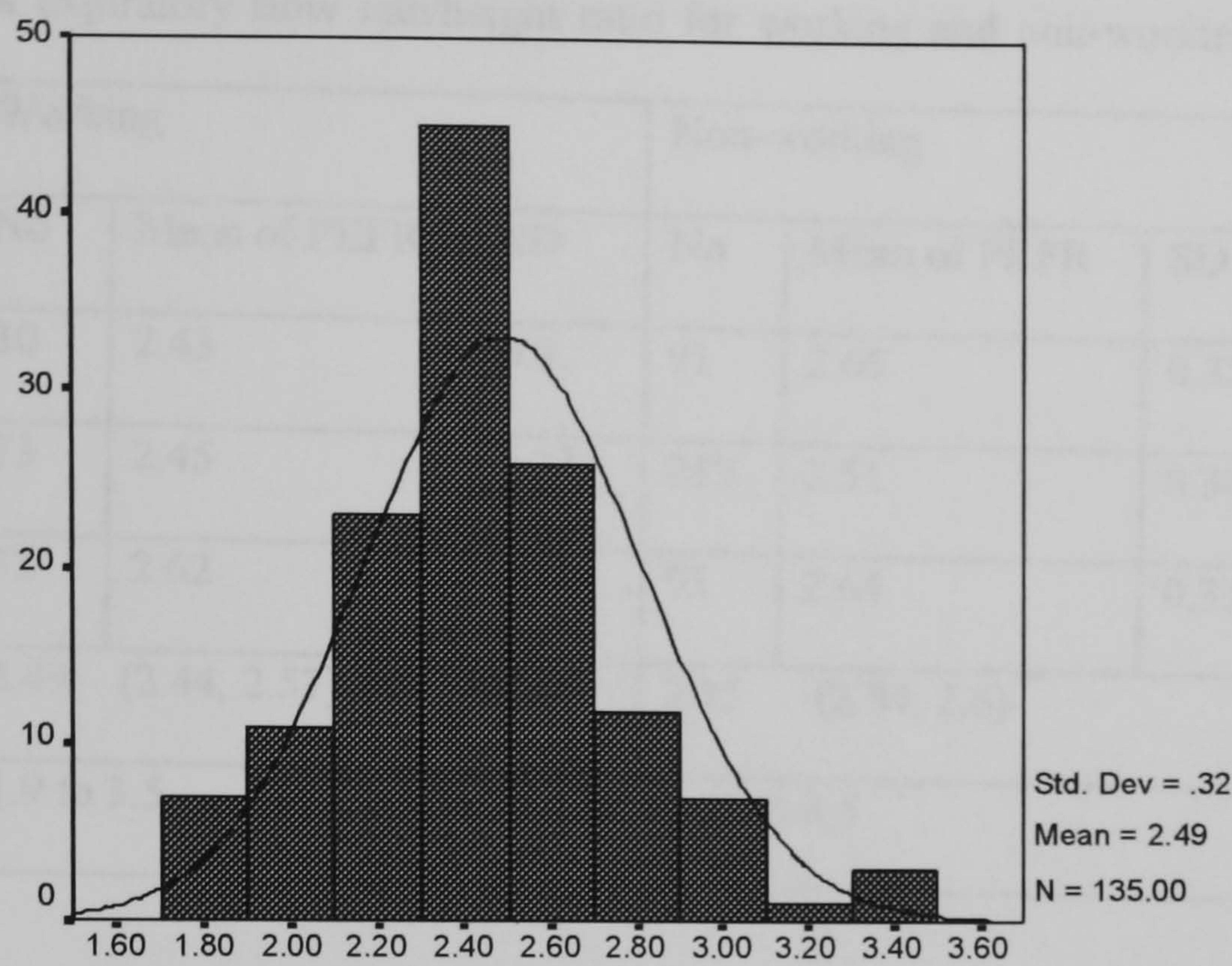


Figure 17. Peak Expiratory Flow Rate/ht of non-working children

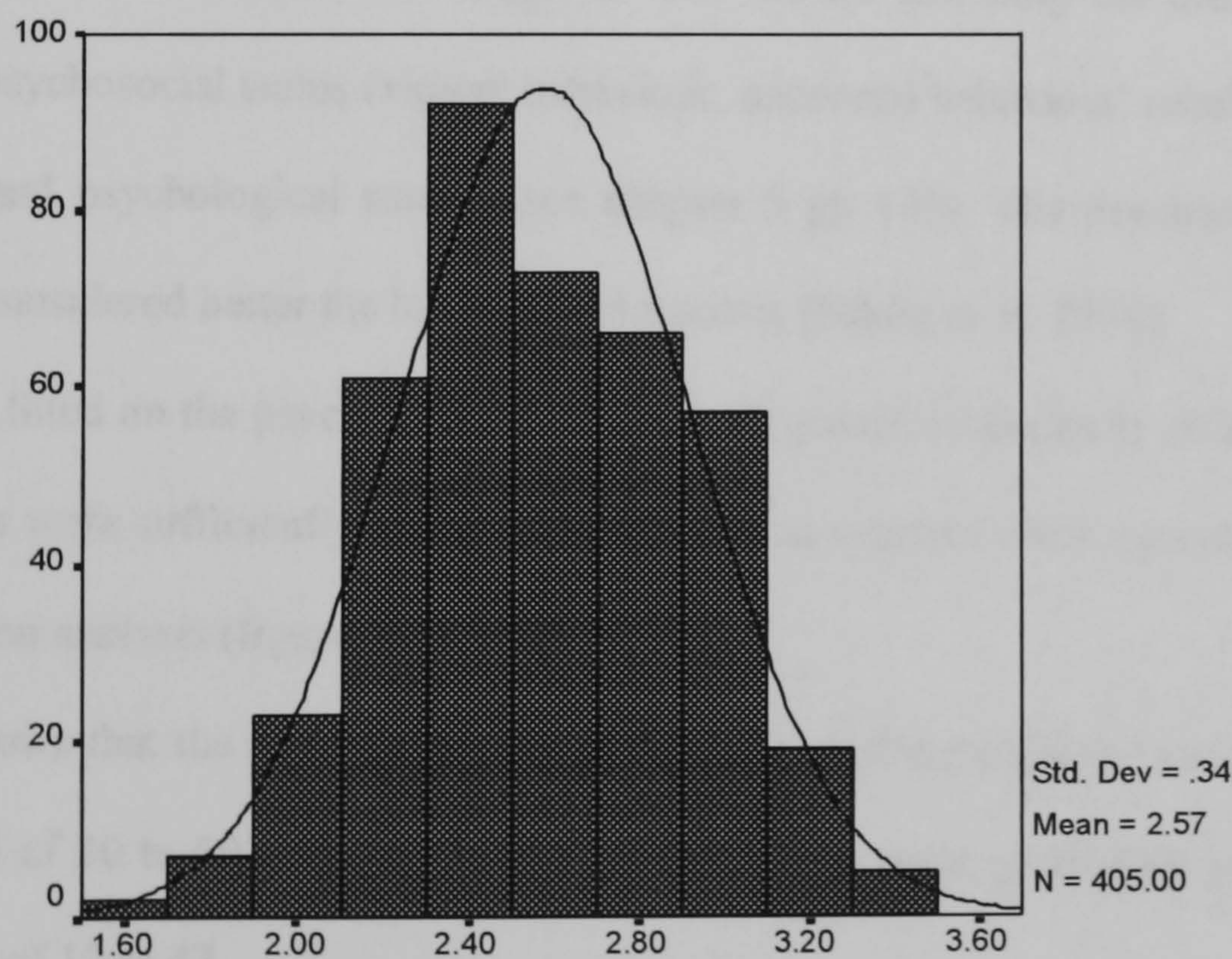




Table 24: Peak expiratory flow rate/height ratio for working and non-working-children

Age	Working			Non-working			
	No	Mean of PEFR	SD	No	Mean of PEFR	SD	p
11-12	30	2.43	0.3	91	2.65	0.35	0.000
13-14	73	2.45	0.31	219	2.51	0.34	0.074
>14	32	2.62	0.34	95	2.64	0.31	0.52
Total mean (CI)	2.49 (2.44, 2.57)			2.55 (2.54, 2.6)			0.011
Range	1.9 to 3.5			1.65 to 3.5			

**6.2.2.5 Psychosocial status:**

The psychosocial status score of working and non-working children was calculated by the summation of weight of four factors assessing the different aspects of psychosocial status (violent behaviour, antisocial behaviour, rebellious behaviour and psychological status) (see chapter 5 pp 145). The psychosocial status was considered better the lower the total score. [Nihira et al, 1974]

Histograms fitted on the psychosocial status of both groups in the study revealed that the data were sufficiently normally distributed to conduct t-test, correlation and regression analysis (figure 18 and 19).

Table 25 shows that the mean psychosocial score of working children was 37.9 with a range of 20 to 59 while the mean was 24 in non-working children group with a range of 12 to 47.

The difference between the means was strongly significant ( $t=21.4$ ,  $p<0.001$ ).



All age groups of working children tended to have significantly higher mean psychosocial scores compared with corresponding age groups of non-working children. ( $p < 0.001$ ).



Figure 18. Psychosocial status of working children

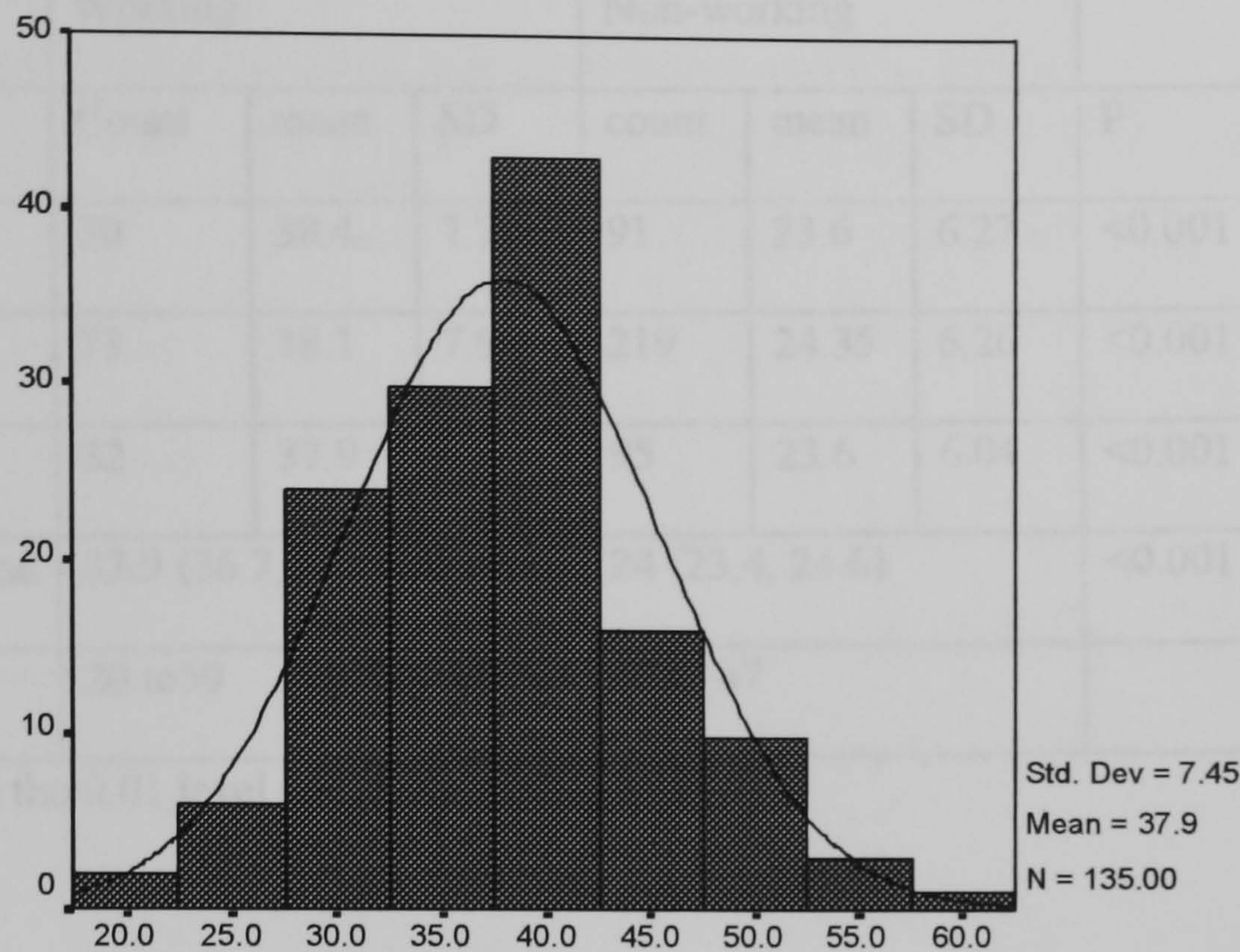


Figure 19. Psychosocial status of non-working children

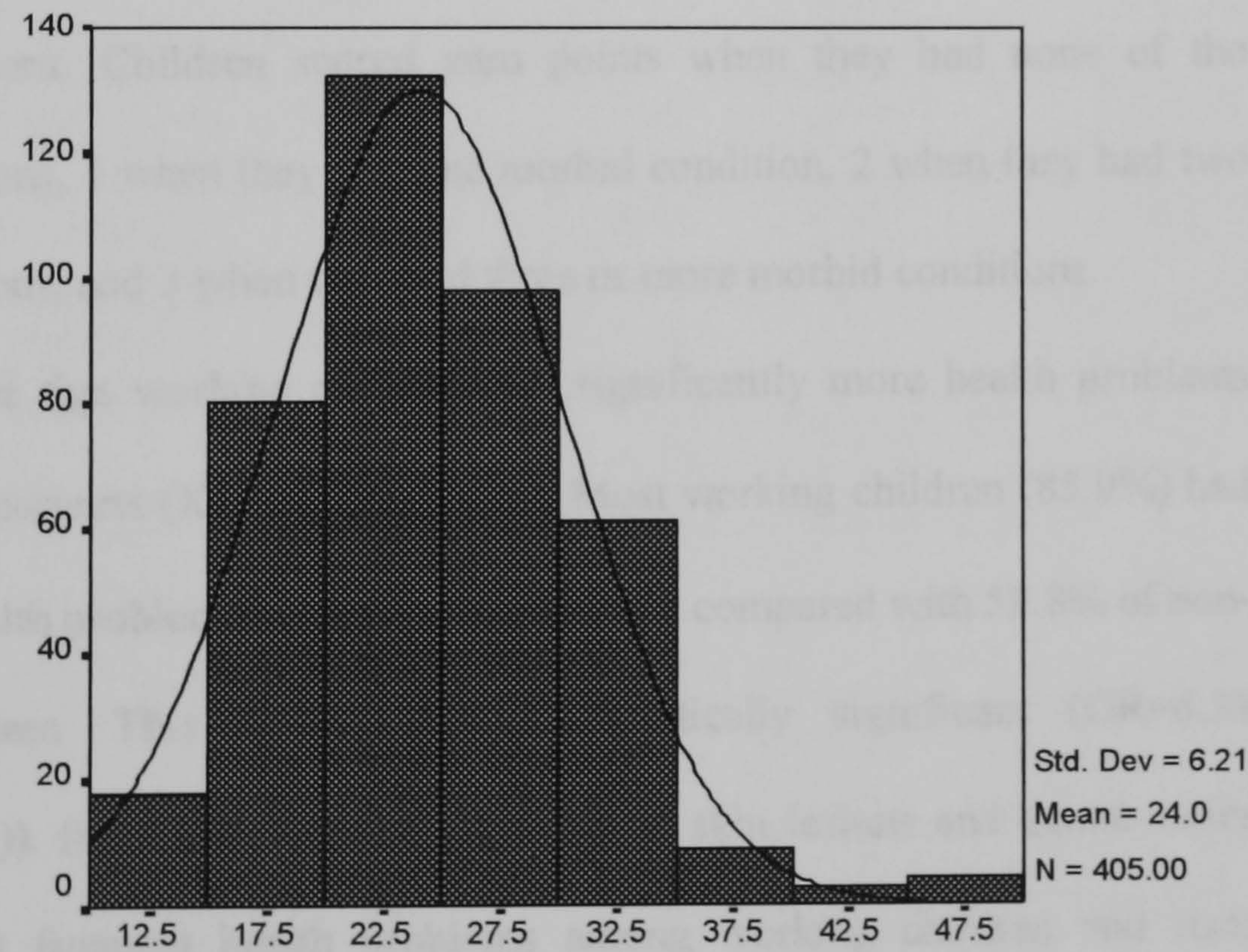




Table 25. Comparison of psychosocial status score of working and non-working children in relation to age groups

Age	Working			Non-working			
	Count	mean	SD	count	mean	SD	P
11-12	30	38.4	7.79	91	23.6	6.27	<0.001
13-14	73	38.1	7.93	219	24.35	6.26	<0.001
>14	32	37.9	7.45	95	23.6	6.04	<0.001
Total mean (CI)	37.9 (36.7,39.2)**			24 (23.4, 24.6)			<0.001
Range	20 to59			12 to 47			

\*\*Significant at the 0.01 level (2-tailed).

6.2.2.6 Morbidity prevalence:

Morbidity among working and non-working children was assessed by using 6 morbid conditions. Children scored zero points when they had none of the morbid conditions, 1 when they had one morbid condition, 2 when they had two morbid conditions, and 3 when they had three or more morbid conditions.

Table 26 shows that working children had significantly more health problems than their counterparts ( $X^2=61.9$ ,  $p<0.001$ ). Most working children (85.9%) had at least one health problem at the time of interview compared with 58.8% of non-working children. This difference was statistically significant (OR=4.28 (CI=2.47, 7.56)). (table 26). Table 27 shows that skin lesions and dental caries were the most frequent health problems among working children and their controls.



Table 26 Morbid conditions among working and non-working children.

Health problem	Working		Non-working		Odds ratio (CI)	p value
	Count	(%)	count	(%)		
No problems	19	(14.1)	167	41.2	4.28 (2.47 , 7.56)	0.000
One morbid condition	44	(32.6)	151	(37.3)		
Two morbid conditions	50	(37)	71	(17.5)		
≥ 3 morbid conditions	22	(16.3)	16	(3.9)		

Chi<sup>2</sup> = 61.9, p=0.000

Table 27 Morbidity rate among working and non-working children.

	Working		Non-working	
Health problem	Count	(%)	count	(%)
No problems	19	(14.1)	167	(41.2)
Skin lesion (burns, cuts)	80	(59.3)	113	(27.9)
Back & lower joints pain	33	(24.4)	35	(8.6)
Allergy (eye redness)	24	(17.8)	29	(7.2)
Dental caries	70	(51.9)	152	(37.5)

### **6.2.3 Work-related variables**

This section describes the work-related variables of working children. Four types of exposure variables were included: 1- age when the child started work; 2-the amount of work which was expressed by the number of years and the number of working hours performed per week; 3- Monthly income earned by the child from his work; 4-type of work (industrial, agriculture and services) performed by working-children included in the study. Frequencies, means with 95% confidence intervals, percentages and ranges were calculated for each variable when it was possible and relevant as shown in table 28.

#### **6.2.3.1 Starting age:**

Table 28 shows that the mean starting age was 10.6 (CI=10.38, 10.82) and ranged from 7 to 14 years. Children mostly started to work at very young ages: more than half (53.3%) started before the age of 10 years. 41.5% started when they were between 11 and 12 years and only 5.2% of working children started to work after the age of 12 years.

#### **6.2.3.2 Duration of work in years:**

The mean working years of children was 2.8 years (CI=2.6, 3.4) and the range was between 1 and 7 years.

Approximately half the children (47.4%) had been working for 2 years or less at the time of the survey while 40% had been working for a period between 3 and 4

years and only 12.6% had been working for more than 4 years (table 28).

#### **6.2.3.3 Working hours per week:**

The mean working hours per week was 57.2 (CI=54.88, 59.52) with a range of 30 to 80 hours per week.

Most children (89.6%) were working for long hours and exceeded the ceiling hours of work (36 hours) allowed by law to children in Jordan. [Ministry of Labour, 2000] These children often were working without any time off during the week. The study showed that 55.6% of children were working for 37 to 60 hours per week and 34.1% were working for more than 60 hours per week. Only 10.4% of children were working within the allowed limit of working hours (36 hours) in Jordan (table 28).

#### **6.2.3.4 Type of work:**

Children were engaged in three categories of work; most children were working within the industrial and service sectors (43.7 and 37.8% respectively). while only 18.5% were engaged in the agriculture sector. This difference might be related to the large variety of occupations within the first two sectors and the sample selection process (table 28).



**6.2.3.5 Child income per month:**

Table 28 shows that monthly income of children generally was low. The mean was about 34.04 JD per month (CI=30.58, 37.5) with a range from 00 to100 JD. Most of them (94.4%) earned less than the per capita income in Jordan (64 JD). Some children (6.7%) were totally unwaged; many (47.4%) earned just one JD or less per day, while 39.4% earned between 31 and 63 JD per month (approximately 1-2 JD per day).

Table 28. Work variables characteristics among working children

Variable	Count	%
Age of starting (years)		
-10	72	53.3
11-12	56	41.5
>12	7	5.2
Mean (CI)	10.6 (10.38, 10.82)	
Range	7 to 14	
Duration of work (years)		
<=2	64	47.4
3-4	54	40
>4	17	12.6
Mean (CI)	2.8 (2.6, 3.4)	
Range	1 to 7	
Working hours/week		
<=36	14	10.4
37-48	32	23.7
49-60	43	31.9
>60	46	34.1
Mean (95% CI)	57.2 (54.88, 59.52)	
Range	30 to 80	
Type of work		
Industrial	59	43.7
Agriculture	25	18.5
Services	51	37.8
Child monthly income (JD)		
0	9	6.7
1-30	64	47.4
31-63	43	39.4
=>64	9	6.7
Mean (95% CI)	34.04 (30.58, 37.5)	
Range	0 to 100	

## 6.3 Correlation and Regression analysis

In order to answer the main objective of the present study, health outcome variables (weight, height, PCV, skinfold thickness, peak expiratory flow rate and morbidity prevalence) were examined separately with their hypothetical predictors (work status, socio-economic variables and smoking status) through full regression analysis.

First of all, as is evident in the name multiple linear regression, it is assumed that the relationship between variables is linear. In practice this assumption can virtually never be confirmed. Fortunately, multiple regression procedures are not greatly affected by minor deviations from this assumption. [Statsoft, 2002]

It is assumed in multiple regression that residuals (predicted minus observed values) are distributed normally. According to above mentioned information and in order to review the distributions of the major variables of interest in the study, histograms for the residuals as well as normal probability plots were produced.

### 6.3.1 Multicollinearity and interaction problems

Multicollinearity is a common problem in many correlation analyses. When multiple variables (predictors) are involved in the analyses, the problem of collinearity may exist if predictor variables are closely correlated. In this situation, one of the predictor variables becomes redundant and is dropped from the regression model. [Wulder, 2001]



Before the different models for predicting the outcome variables were fitted, the problems of interaction and multicollinearity between the independent variables were considered. When the correlation between independent variables is high ( $>0.80$ ), the problem of multicollinearity has serious implications for the estimation using regression analysis. [Lewis, 1982]

In these conditions, it is quite difficult to judge the relative effects of the independent variables and the estimated regression coefficients become statistically insignificant even when an association between independent and dependent variables actually exists. Some variables in the current study might be highly interrelated and in order to arrive at an unbiased linear estimation, problems of multicollinearity must be resolved. It has been suggested that bivariate correlation among the independent variables should be examined to search for coefficients of about 0.80 or larger. [Lewis, 1982][Wulder, 2001]

In this case the problem of multicollinearity and the redundant variables could be assessed and diagnosed through the examination of the Variance Inflation Factor (VIF) and tolerance ( $1/VIF$ ) by using the collinearity diagnostics in regression analysis [SPSS, 1998]. The VIF and tolerance value usually reflects the presence or absence of multicollinearity;  $VIF \geq 2$  or a tolerance of 0.5 or less the variable may be affected by multicollinearity. [UCLA, 2001]

Matrix of correlation among the independent variables was performed (table 29). The result showed that all correlation coefficients were weak or moderate (below 0.80) and the highest correlation appeared to be between the family head's

occupation and education level of fathers where the coefficient was 0.635.

These results suggest that the problem of multicollinearity was not a relevant problem in the study, since the VIF and tolerance of all variables included in the different final regression models were less than 2 for the VIF and more than 0.5 for the tolerance value.

Table 29. Bivariate correlation coefficients between socio-economic status variables among working and non-working children

	1	2	3	4	5	6	7
1	1.000						
2	.405**	1.000					
3	.333**	.635**	1.000				
4	.323**	.405**	.431**	1.000			
5	.409**	.281**	.172**	.191**	1.000		
6	.408**	.507**	.394**	.297**	.287**	1.000	
7	.006	-.092*	-.111**	-.049	-.124**	-.083	1.000

\*\*Significant at the 0.01 level (2-tailed).



**6.3.2 Effect of work on the health and psychosocial status.**

Partial regression shown in table 30 was addressed to establish the influence of working status on the health parameters included in the study.

For this purpose working status (working and non-working) was regressed on weight for age z score, height for age z score, PCV, skinfold thickness percentile, peak expiratory flow rate for height, psychosocial status score and smoking status.

The analysis showed that working status appeared to be a strong significant predictor for all independent variables included in the study. Statistically the correlation was very high with p values <0.001 in the case of weight z score, height z score, PCV, morbidity prevalence, psychosocial status and smoking status and equal to 0.02 and 0.013 in the case of skinfold thickness/age and peak expiratory flow rate/ht respectively.

Table 30. Effect of work on health status indicators, psychosocial variables and smoking status of working and non-working children

	Working status ( 1=working, 2=non-working	
Variables	B	(C.I) P value
wt/age z score	0.332	(0.170 , 0.494 ) <.001
Ht/age z score	0.533	(0.365 , 0.702) <.001
Packed cells volume	2.941	(2.292 , 3.589) <.001
Skinfold thickness/age	0.067	(0.024 , 0.110) .002
Peak Exp. Flow rate/ ht	0.084	(0.017 , 0.150) .013
Psychosocial status score	-13.92	(-15.19 , -12.64) <.001
Morbidity prevalence	-0.756	(-0.932 , -0.579) <.001
Smoking status	-0.225	(-0.302 , -0.147) <.001

Independent variable: work status

### 6.3.3 Effect on weight

Since the health outcome variables (dependent variables) usually are affected by multiple causes, the partial regression model (table 30) was extended to a full model including the socio-economic variables (per capita income, head family occupation, father and mother education, house m<sup>2</sup> per capita and monthly durable expenditure), smoking status and work status variables (table 31). This could provide a more complete explanation of the outcome variables.

Furthermore, it also gave the opportunity to determine how much the socioeconomic variables and smoking affect the health outcome.

Table 31 summarises the result of regression analysis which has been performed to detect the effect of working status, household per capita income, occupation of head of household, education level of parents, house m<sup>2</sup> per capita, expenditure on consumer durables, and smoking status on weight for age z score of children.

All these variables (socio-economic variable and smoking status) were incorporated in a full model regression analysis since none of their correlation coefficients reach the critical value of interrelation (0.80). The significant effect of work status, appeared in the partial regression (table 30), persisted in the full model after controlling for socio-economic status and smoking variables (table 31). Children of the same socio-economic and smoking status who were non-working had a weight z score 0.31 higher than working children (B=0.31 (CI=0.14, 0.48)).

Per capita income showed significant and positive effects on the weight for age z

score producing an increase of 0.004 in z score for each additional one J.D in the per capita income ( $B=0.004$ (CI=0.000, 0.008)).

Per capita house m<sup>2</sup> and smoking status were on borderline significance on weight z score (  $p= 0.086$  and  $0.081$  respectively). At that level, the weight z score increased by 0.012 for each additional m<sup>2</sup> in the per capita house area ( $B=0.01$ (CIs=0.002, 0.03)). In the case of smoking status, non-smoking children had a weight z score 0.16 higher than smoking children ( $B=0.16$ (CIs=-0.02, 0.34)).

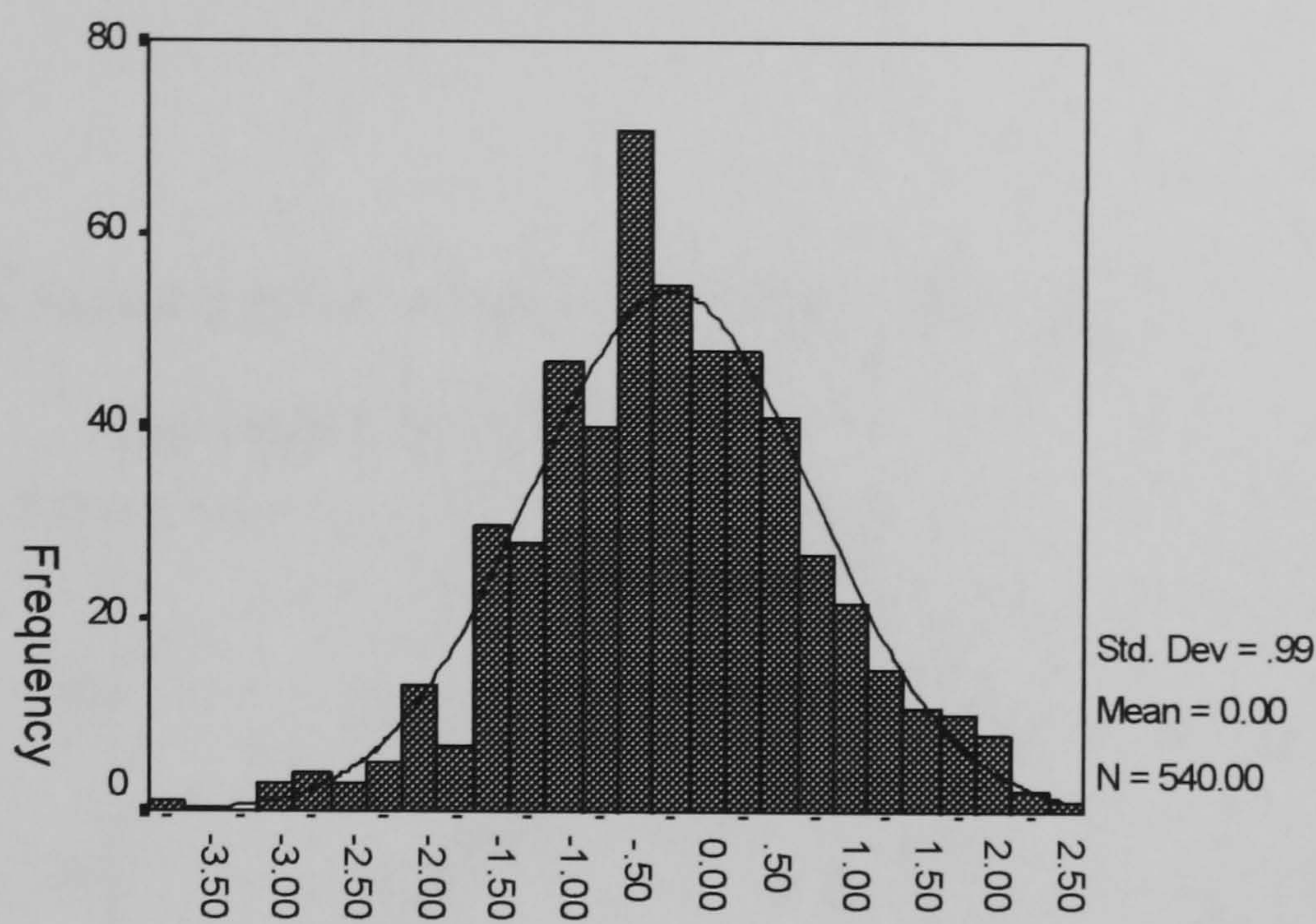
The other socio-economic variables did not show any significant association with the weight for age z score.

This model explained a small amount of variance in weight for age z score of children (6.5%) and most of this variance was accounted for by the working status and per capita income variables (3 and 2% respectively).

Before drawing final conclusions, goodness and appropriateness of the model were assessed by plotting the residuals for this model. Figure 21 does not reveal any clear pattern in the disturbances and this is an indication that there is no correlation between the dependent (weight z score) variable and the errors. Figure 22 shows that the disturbances are normally distributed since all the points cluster around the straight line. As a whole, the distributions shown in these graphs (figure 20, 21, 22) suggest the model is appropriate.

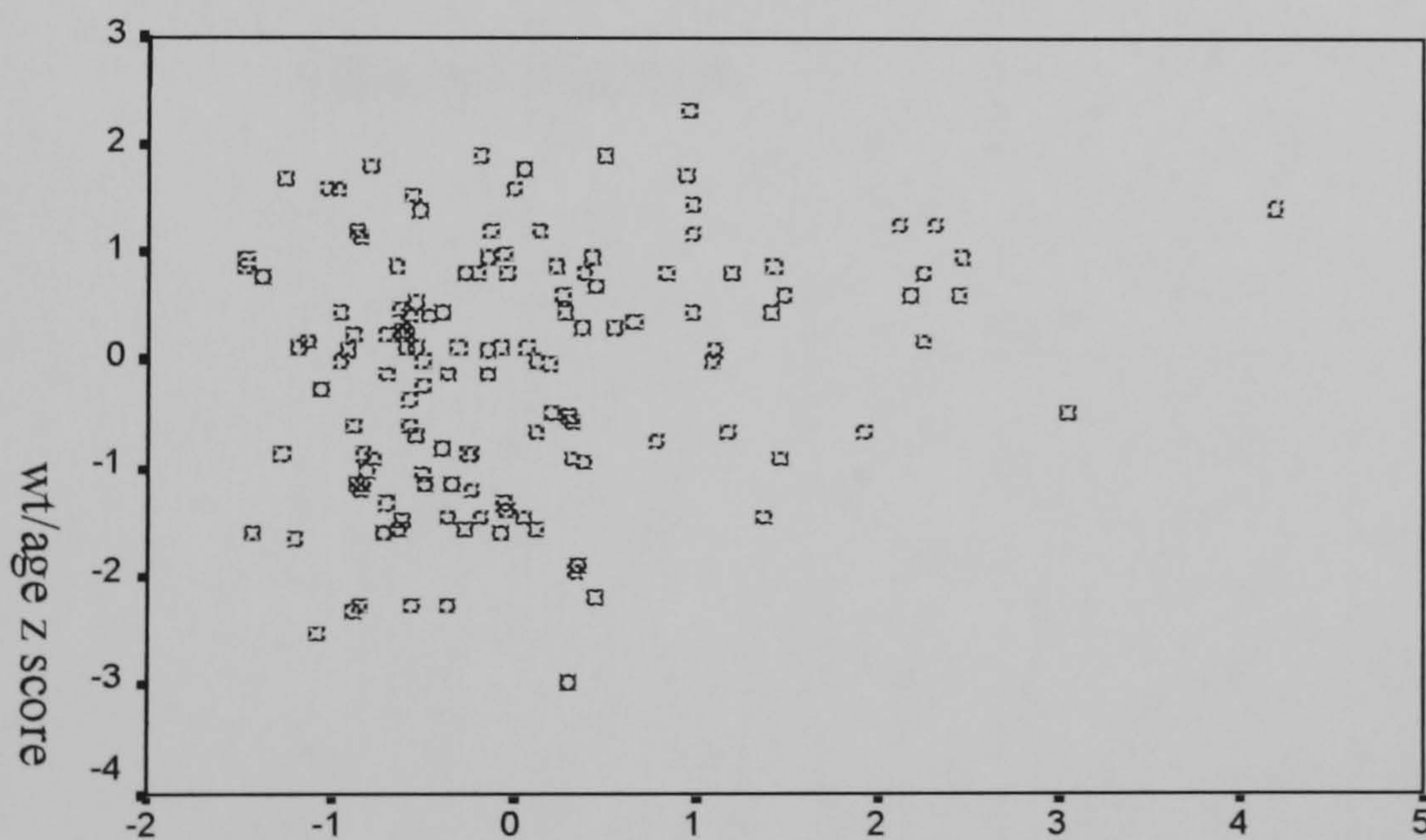


Figure 20. Histogram. Depen. Variable: wt z score



Regression Standardised Residual

Figure 21. Scatterplot. Depen. Variable: wt z score



Regression Standardised Predicted Value



Figure 22. Normal P-P Plot of Regression Standardised Residual

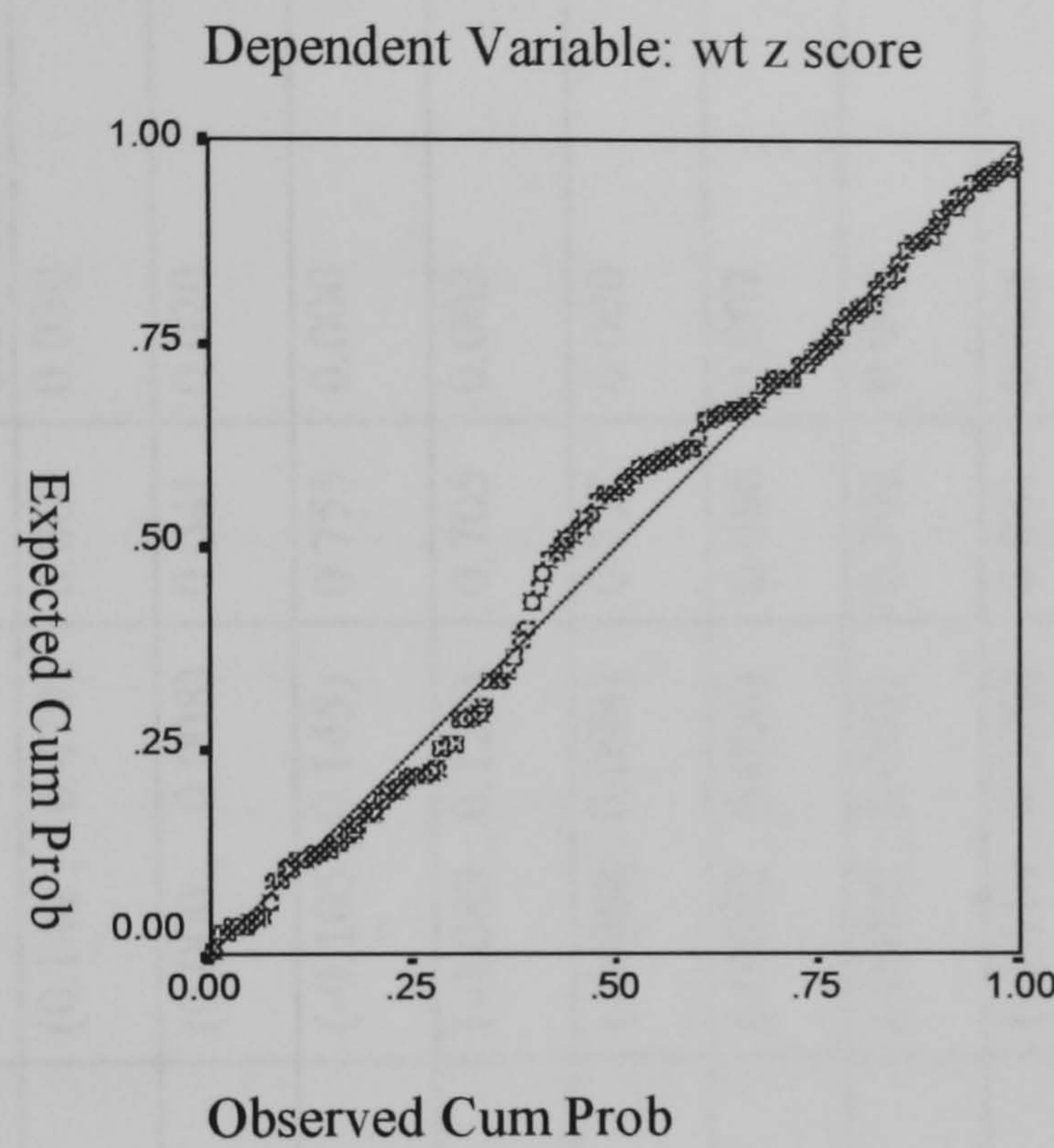


Table 31. Effect of work, socio-economic status variables and smoking status on weight for age z-score

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each independent variable)
Working status	0.310	(0.142 , 0.479)	0.000	0.030
Per capita income	0.00395	(0.000 , 0.008)	0.041	0.020
head of family occupation weight	0.01989	(-0.105 , 0.145)	0.755	0.000
father education level	0.01995	(-0.083 , 0.123)	0.705	0.002
mother education level	0.01503	(-0.068 , 0.098)	0.722	0.000
house area (m2)per capita	0.01193	(-0.002 , 0.026)	0.086	0.007
Durable expenditure/month	0.00033	(-0.002 , 0.003)	0.791	0.001
Smoking status	0.158	(-0.019 , 0.335)	0.081	0.005
Total R <sup>2</sup>				0.065

Dependent Variable: wt/age z score



#### 6.3.4 Effect on height

The same independent variables regressed with weight were also used to regress height. It was shown that work status also continued to be a highly significant predictor of height even when the socio-economic and smoking status variables were incorporated in the model (table 32). Working status was negatively associated with the height z score of children. Non-working children had height z scores 0.51 higher than working children ( $B=0.51$  (CIs=0.33, 0.68)).

Per capita house  $m^2$  also appeared to be significantly and positively associated with the height for age z score of children. For each additional  $m^2$  there was an increase of 0.02 z score in height ( $B=0.02$ (CIs=0.01, 0.04)).

The remaining independent variables appeared to be irrelevant predictors for the height of children. The combined effects of independent variables in this model account for approximately 10% of the variations in height for age z score of children. Most of the variance in this model was contributed by working status (6.7%) and house  $m^2$  per capita (1.5%)

As for the model fitted on weight z score, plotting the residuals for the model fitted on height z score does not suggest any obvious problems (figures 23, 24, 25).



Figure 23.Histogram. Depen.Variable:ht z score

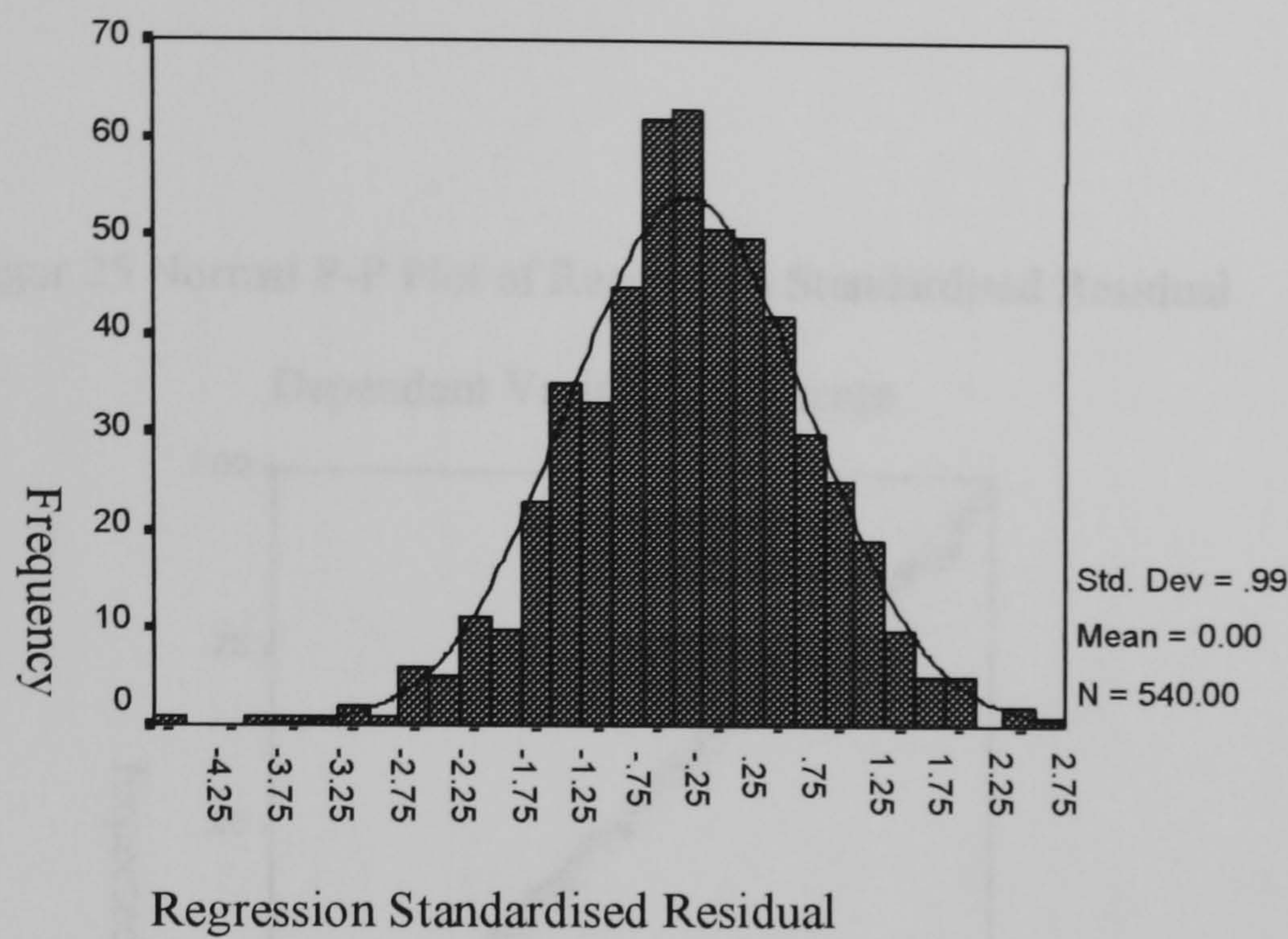
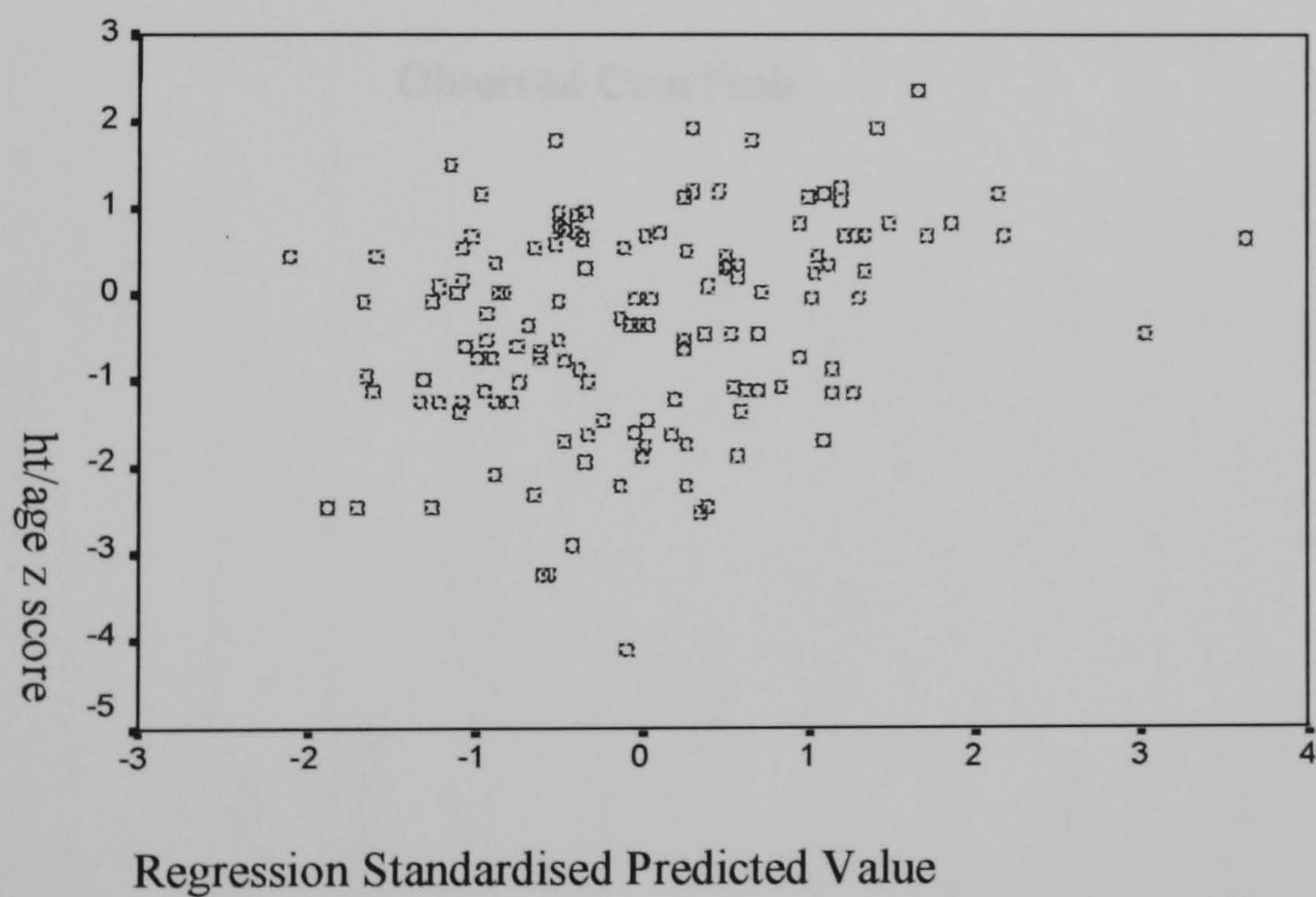


Figure 24.Scatterplot. Depent Variable:ht z score





Figur 25 Normal P-P Plot of Regression Standardised Residual

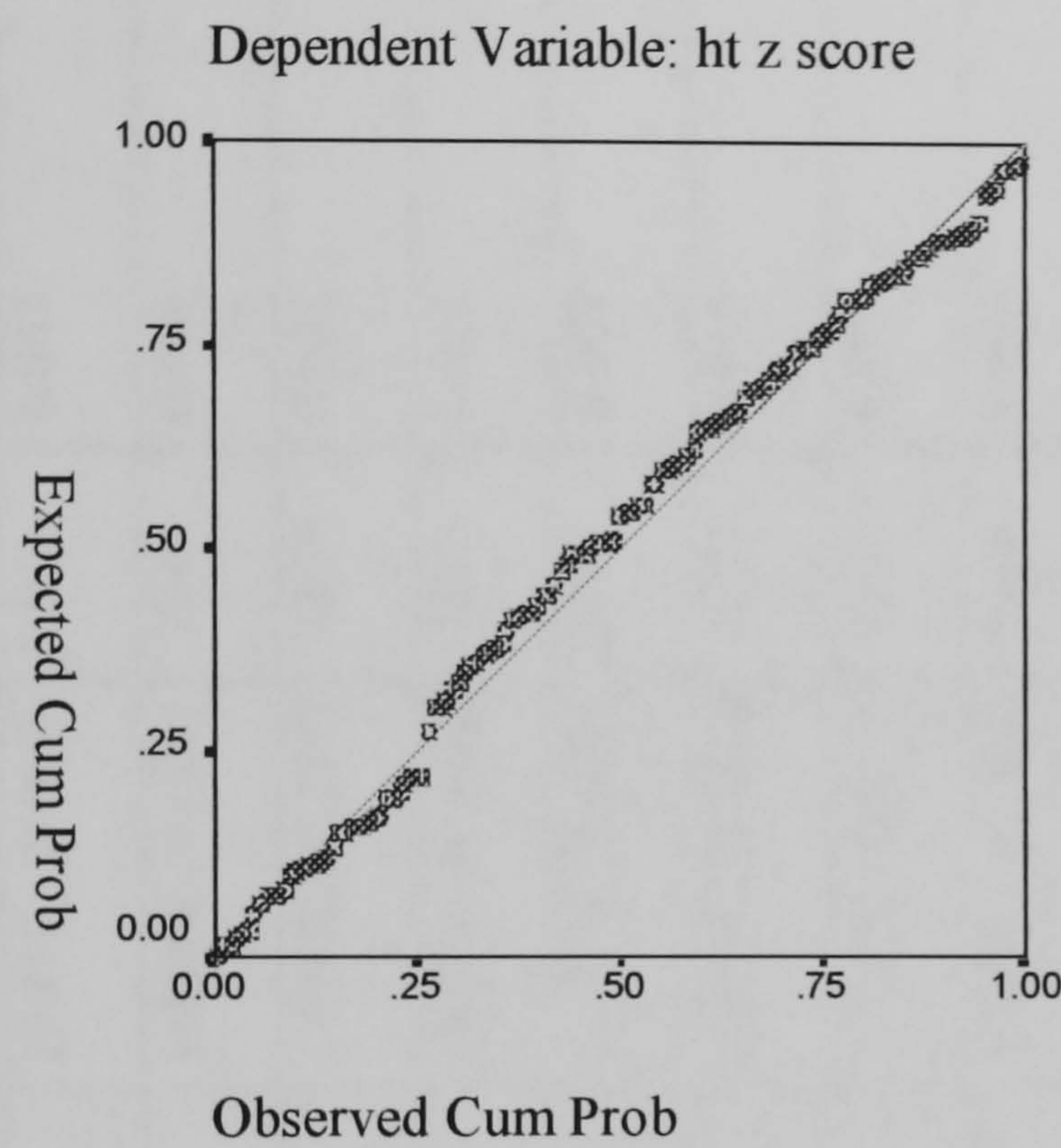




Table 32. Effect of work, socio-economic status variables and smoking status on height for age z-score

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each independent variable)
Working status	0.51	(0.332 , 0.683)	0.000	0.067
Per capita income	0.0006	(-0.003 , 0.005)	.7740	0.008
Head of family occupation weight	0.048	(-0.082 , 0.178)	.4700	0.002
Father education level	-0.019	(-0.126 , 0.089)	.7310	0.001
Mother education level	-0.006	(-0.092 , 0.081)	.8990	0.000
House area (m <sup>2</sup> )per capita	0.02	(0.008 , 0.036)	.0020	0.015
Durable expenditure/month	0.0004	(-0.002 , 0.003)	.7330	0.000
Smoking status	0.144	(-0.04 , 0.328)	.1260	0.004
Total R <sup>2</sup>				0.098

Dependent Variable: ht/age z score

### 6.3.5 Effect on packed cell volume

In a similar manner the same variables were regressed on packed cell volume as shown in table 33.

Two only of the independent variables appeared to be significantly associated with the packed cell volume level. These variables were work status and household durable expenditure.

Working status was negatively associated with the PCV level of children as well as in the partial model reported in table 30. Working children had 2.96 PCV units lower than non-working children before (table 30) and after controlling for socio-economic status and smoking status ( $B=2.96$  (CIs=2.28, 3.64)) (table 33)

In this model, durable expenditure per month was as a predictor and had a significant independent effect on the level of PCV. For each additional J.D expended on the running cost of major durables, the PCV increased by 0.011 unit ( $B=0.011$  (CIs=0.00, 0.02)).

Combined independent variables explained about 15% ( $R^2=0.149$ ) of variance in the child's PCV level.

Furthermore, most of the variance in PCV level (13%,  $R^2=0.129$ ) was explained by work status while all the other independent variables explained only 2 percent.

Similarly to weight and height z scores, goodness and appropriateness of the model were checked and found fairly acceptable which supports the hypotheses that the variables were drawn from a population with normal distribution values



Table 33. Effect of work, socio-economic status variables and smoking status on packed cell volume (PCV)

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each independent variable)
Working status	2.96	(2.279 , 3.638)	<.0001	0.129
Per capita income	0.011	(-0.004 , 0.0260)	.1640	0.010
Head of family occupation weight	-0.314	(-0.816 , 0.1890)	.2210	0.001
Father education level	0.0093	(-0.409 , 0.4270)	.9650	0.000
Mother education level	-0.0363	(-0.371 , 0.2990)	.8320	0.000
House area (m2)per capita	2.959	(-0.039 , 0.0710)	.5650	0.000
Durable expenditure/month	0.0108	(0.000 , 0.020)	.0410	0.006
Smoking status	-0.314	(-0.125 , 1.304)	.1050	0.004
Total R <sup>2</sup>				0.149

Dependent Variable: PCV

### **6.3.6 Effect on skinfold thickness percentile:**

When the regression model was fitted on the skinfold thickness percentile all exposures appeared to be statistically insignificant predictors except the work status. Table 34 shows that work status had a significant negative effect on skinfold thickness percentile ( $p=0.005$ ) even when socio-economic and smoking status variables were controlled in the full regression model.

Non-working children had a skinfold thickness percentile equivalent to 6.85 ( $B=6.85$ ) greater than working children.

The regression model explains only 2.1% of the variance ( $R^2=0.021$ ) and most of this variance was attributed to work status, which explains about 1.5% ( $R^2=0.015$ ).

Table 34. Effect of work, socio-economic status variables and smoking status on skinfold thickness percentile

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each Independent variable)
Working status	6.85	(2.05, 11.7)	.005	0.015
Per capita income	0.0019	(-0.106, 0.11)	0.97	0.001
Head of family occupation weight	0.898	(-2.66, 4.46)	0.62	0.001
Father education level	-1.84	(-4.78, 1.1)	0.22	0.000
Mother education level	0.5	(-1.86, 2.86)	0.68	0.001
House area (m2)per capita	0.087	(-0.03, 0.475)	0.66	0.001
Durable expenditure/month	0.021	(-0.048, 0.09)	0.55	0.002
Smoking status	1.76	(-3.28, 6.8)	0.5	0.000
Total R <sup>2</sup>				0.021

Dependent Variable: skinfold thickness percentile



### **6.3.7 Peak Expiratory flow rate:**

The independent variables (work status, socioeconomic variables and smoking status) were regressed on PEFr of children (table 35). The analysis demonstrated that all these independent variables were irrelevant predictors for the PEFr at p value 0.05. Furthermore, the significant effect of work on PEFr ( $p=0.013$ ) in the partial regression model (table 30) became non-significant ( $p=0.079$ ) when the socioeconomic variables and smoking status were incorporated in the regression (table 35). This suggests that the previous effect of work might be confounded by the socioeconomic and smoking status variables incorporated in the analysis.

Table 35 Effect of work, smoking and socio-economic status variables on peak expiratory flow rate/height

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance explained by each independent variable)
Working status	0.06	(-0.007 , 0.132)	.0790	0.011
Per capita income	0.00006	(-0.002 , 0.002)	0.937	0.002
Head of family occupation weight	-0.03	(-0.082 , 0.021)	0.244	0.000
Father education level	0.02	(-0.022 , 0.063)	0.349	0.001
Mother education level	-0.005	(-0.039 , 0.029)	0.779	0.000
House area (m2)per capita	0.004	(-0.001 , 0.010)	0.126	0.006
Durable expenditure/month	0.0004	(-0.001 , 0.001)	0.387	0.001
Smoking status	-0.04	(-0.114 , 0.032)	0.271	0.003
Total R <sup>2</sup>				0.024

Dependent Variable: peak flow rate/ht

### **6.3.8 Effect on psychosocial status:**

In order to determine the effect of working status on the psychosocial status of children, socioeconomic variables and smoking status were regressed together with the work status on the psychosocial status of children included in the study (table 36). The significant effect of work on psychosocial detected in the partial regression model shown in table 28( $B=-13.92$ ( $CI=-15.19, -12.64$ )) was slightly reduced (but still significant) when the socio-economic and smoking status variables were controlled as shown in table 36.

Psychosocial score tended to be reduced by 13 points (better psychosocial status) [Nihira et al, 1974] when the child was non-working ( $B=-12.7$ ( $CI=-13.97, -11.38$ )). Smoking status emerged also as a significant predictor for the psychosocial status. Non-smokers tended to have lower psychosocial scores (better psychosocial status) compared with smoker children ( $B=3.92$ ( $CI=2.56, 5.29$ )).

None of the socioeconomic variables appeared to have significant effect on the psychosocial status at p value equal to 0.05 even though father's education and mother's education showed effects at p values of 0.067 and 0.066 respectively.

Furthermore the analysis showed that all independent variables included in this model explained together about 51 per cent of children psychosocial variance while the work status variable alone explained about 46 % of the variance.



Table 36. Effect of work, smoking and socio-economic status variables on psychosocial status

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each Independent variable)
Working status (1=working, 2=non-working)	-12.676	(-13.97 , - 11.38)	<0.001	0.460
per capita income	-0.009	(-0.038 , 0.02)	0.543	0.003
head of family occupation weight	-0.3	(-1.25 , 0.664)	0.546	0.004
Father education level	-0.74	(-1.54 , 0.051)	0.067	0.003
Mother education level	0.6	(-0.037 , 1.24)	0.066	0.004
House area (m <sup>2</sup> )per capita	-0.04	(-0.147 , 0.063)	0.432	0.002
Durable expenditure/month	-0.006	(-0.024 , 0.013)	0.562	0.000
Smoking status (1=non-smoker, 2=smoker)	3.92	(2.56 , 5.29)	<0.001	0.030
Total R <sup>2</sup>				0.506

Dependent Variable: psychosocial status score

### 6.3.9 Effect on morbidity prevalence

When the same independent variables were regressed on the number of morbid conditions working status, per capita income, mother education and house m<sup>2</sup> per capita had significant effects on morbidity prevalence (table 37).

Non-working children appeared to have less morbid conditions than working subjects ( $B=-0.54$ (CI=-0.71, -0.37)).

Children with higher per capita income had less morbid conditions ( $B=-0.013$ (CI=-0.017, -0.009)).

Children coming from households with smaller house m<sup>2</sup> per capita were significantly more likely to have more morbid conditions ( $B=-0.02$ , CI=-0.034, -0.007,  $p=0.004$ ). Finally children coming from households with higher durable expenditure were significantly more likely to have less morbid conditions ( $B=-0.004$ (CI=-0.007, 0.002)).

The full model explains 31% of the variance ( $R^2=0.309$ ): work status explains 9.4% ( $R^2=0.094$ ); per capita income explains 19% of the variance ( $R^2=0.189$ ); per capita house m<sup>2</sup> explains 11% of the variance ( $R^2=0.11$ ) and durable expenditure variable explains 13.4% of the variance ( $R^2=0.134$ )

Table 37. Effect of work, smoking and socio-economic status variables on morbidity prevalence

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each Independent variable)
Working status	-0.539	(-0.71, -0.37)	<0.001	0.094
Per capita income	-0.013	(-0.017, -0.009)	<0.001	0.189
Head of family occupation weight	-0.044	(-0.171, 0.083)	0.5	0.0091
Father education level	0.064	(-0.078, 0.131)	0.62	0.0053
Mother education level	-0.039	(-0.123, -0.045)	0.36	0.0055
House area (m2)per capita	-0.02	(-0.034, -0.007)	0.004	0.11
Durable expenditure/month	-0.004	(-0.007, 0.002)	0.01	0.134
Smoking status	0.035	(-0.145, 0.22)	0.71	0.01
Total R <sup>2</sup>				.309

Dependent Variable: morbidity prevalence



### **6.3.10 Effect on smoking status:**

Work status and socioeconomic variables were regressed on smoking status of working and non-working children (table 38). Logistic regression was used because smoking status (dependent variable) is a categorical variable (1=nonsmoking, 2=smoking)

Work (1=working, 2= non-working), per capita income and house m<sup>2</sup> per capita were significant predictors of smoking status. Working children seemed more likely to be smokers compared to non-working subjects (B= -0.975, p<0.001).

Children from households with higher per capita income were more likely to be smokers than those with lower per capita income (B=0.0131, p=0.017). Children with lower per capita house m<sup>2</sup> were also more likely to be smokers compared with those of higher per capita house m<sup>2</sup> (B=-0.053, p=0.016).

Table 38. Effect of work, and socioeconomic status variables on smoking status

Independent variables	B	Exp(B)	95% C. I for Exp B	p value	R <sup>2</sup> (% variance Explained by each Independent variable)
Working status	-0.975	0.3773	0.2361, 0.6031	0.000	0.026
per capita income	0.0131	1.0132	1.0024, 1.0241	0.017	0.007
head of family occupation weight	-0.046	0.9551	0.6501, 1.4034	0.815	0.000
father education level	-0.258	0.7727	0.5641, 1.0585	0.108	0.001
Mother education level	0.022	1.0226	0.7909, 1.3223	0.864	0.000
house area (m2)per capita	-0.053	0.9484	0.9084, 0.9902	0.016	0.007
Durable expenditure/month	-0.0027	0.997	0.9891, 1.0055	0.513	0.000
Total R <sup>2</sup>					0.041

Dependent Variable: smoking status

## **6.4 Effect of work related variables, socioeconomic status and smoking status (exposures) on height and weight for age z-score (outcome) of working children**

Correlation coefficients of exposure variables (duration of work/year, age of starting, working hours/week, kind of job, income of working child, smoking, maternal height, household per capita income, occupation of the head of the family, father's education, mother's education, per capita house m<sup>2</sup>, durable expenditure/month) on outcome variables (weight for age z score, height for age z score) were calculated using Spearman rank correlation (table 39) because some of variables were not sufficiently normally distributed to use Pearson correlation. Only two exposure variables showed significant correlation with weight for age z score; duration of work in years revealed an inverse correlation ( $r = -0.244$ ), while maternal height revealed a positive correlation ( $r = 0.239$ ). In the case of height for age z score, duration of work revealed an inverse significant correlation ( $r = -0.286$ ), while maternal height ( $0.249$ ), household per capita income ( $r = 0.210$ ), head of family occupation ( $r=0.222$ ), house m<sup>2</sup> per capita ( $r=0.240$ ) and durable expenditure ( $r=0.204$ ) showed significant positive correlation with height for age z score.



Table 39 Bivariate correlation coefficients of work related variables and socio-economic variables on growth variables (wt z-score, ht z-score)

	wt/age z score	ht/age z score
Monthly income of child	.097	.065
Kind of job	-.070	-.026
1=nonsmoking ,2=smoking	.019	-.020
Mother height	.239**	.249**
Per capita income	.143	.210*
Head family occupation	.136	.222**
Father education level	.054	.119
Mother education level	.136	.103
Duration of work/year	-.244**	-.286**
Age of starting age	.157	.015
Working hours/week	.072	.026
House area (m2)per capita	.082	.240**
Durable expenditure/month	.153	.204*

\*\* Correlation is significant at the .01 level (2-tailed).

\* Correlation is significant at the .05 level (2-tailed).

All exposure variables, whether or not they achieved conventional levels of statistical significance on bivariate analysis (table.39), were entered into the regression analysis.  $R^2$  (the proportion of the variance explained by the model) and the regression coefficient B (change in the outcome variable associated with a change of one unit in the exposure variable) for each exposure were estimated for the models fitted on weight for age z score and height for age z score of working children.

Type of work undertaken by the child (which is a categorical variable with three values) was recoded into two dummy variables for ease of interpretation in the regression model.

Enter and Stepwise method were fitted separately and no difference was found between their results. Exposures found to be significant by using Enter method were also similarly found to be significant by using the Stepwise method. So the later method was used in regression models fitted on weight and height z scores because it excludes all exposures which fail to achieve a significance level of  $p \leq 0.05$ . This makes the tables easier to present and interpret.

The regression model fitted on weight z-score (table 40) explains 20.1% of the variance ( $R^2 = 0.201$ ): 11.3% of the variance was explained by duration of work with 0.328 reduction in z-score for each additional year worked; 5.3% of the variance was explained by maternal height with 0.059 increase in z-score for each additional cm. of maternal height; the child's monthly income explains a further 3.4% of the variance with 0.012 increase in z-score for each additional JD earned; the family per capita

income accounts for 3.6% of the variance with a 0.010 increase in weight z-score for each additional JD.

Goodness and appropriateness of the model fitted on weight z score were assessed by plotting Histogram, Scatterplot and Probability Plot P-P Plot (figures 26, 27, 28). No correlation between the wt z score variable and the error was found since there was no clear pattern in the disturbances (figure 27). Moreover the disturbances appear to be normally distributed and match the assumed linear distribution as seen in figures 26 and 28. This suggests that the observed values were likely to have been drawn from a population with normal distribution values.



Table 40. Effect of work related variables, maternal height and per capita income on weight for age z-score

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each independent variable)
Duration of work/year	-0.328	-0.479, -0.176	<0.001	0.113 (11.3%)
Monthly income of child	0.012	0.002, 0.022	0.022	0.034 (3.4%)
Maternal height in cms	0.059	0.019, 0.099	0.004	0.053 (5.3%)
Per capita income	0.010	0.002, 0.019	0.002	0.046 (4.6%)
Final model				0.201 (20.1%)

Dependent Variable: wt/age z score



Figure 26. Histogram. Depen. Variable: wt z score

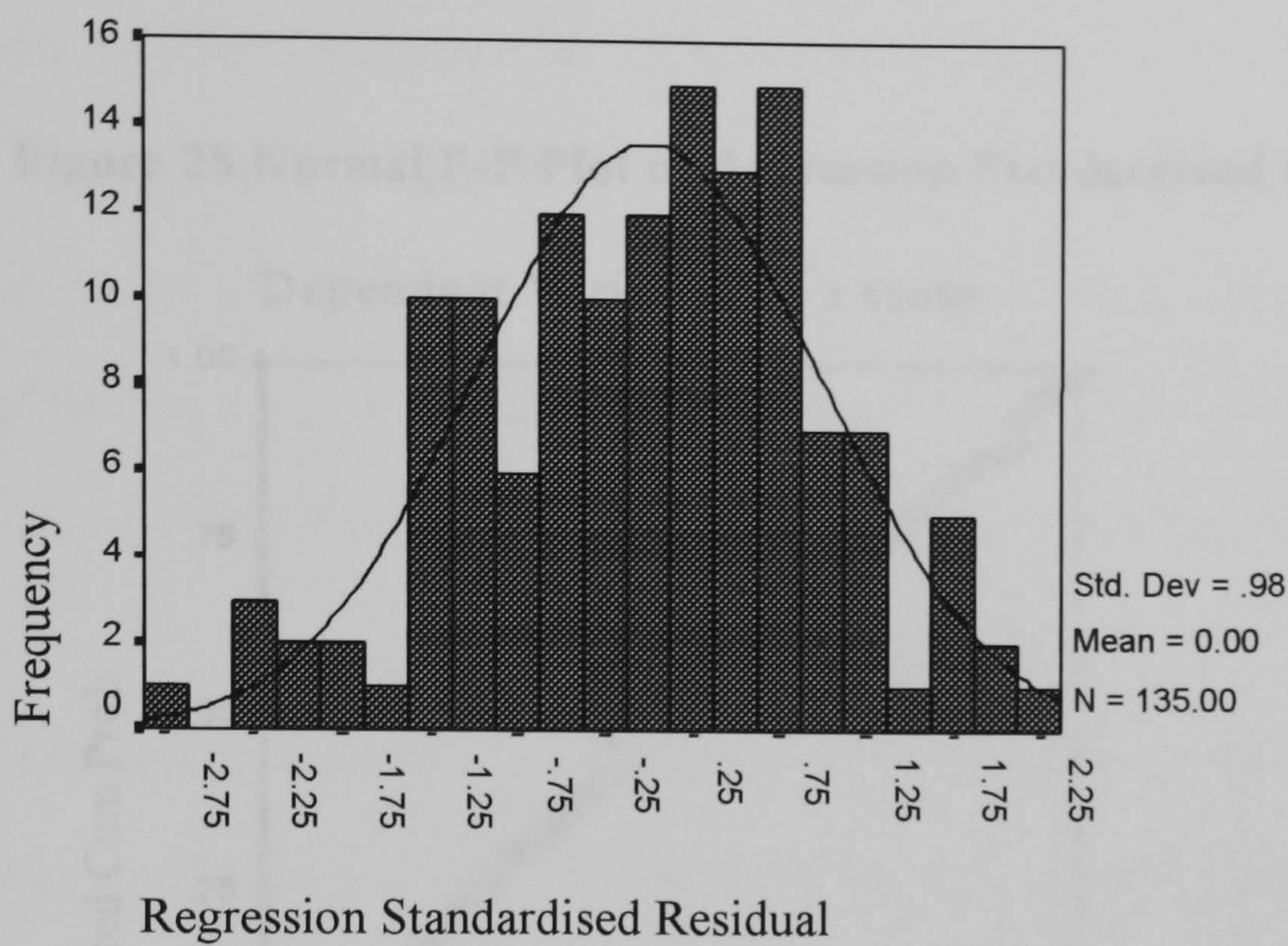


Figure 27. Scatterplot. Depen. Variable: wt z score

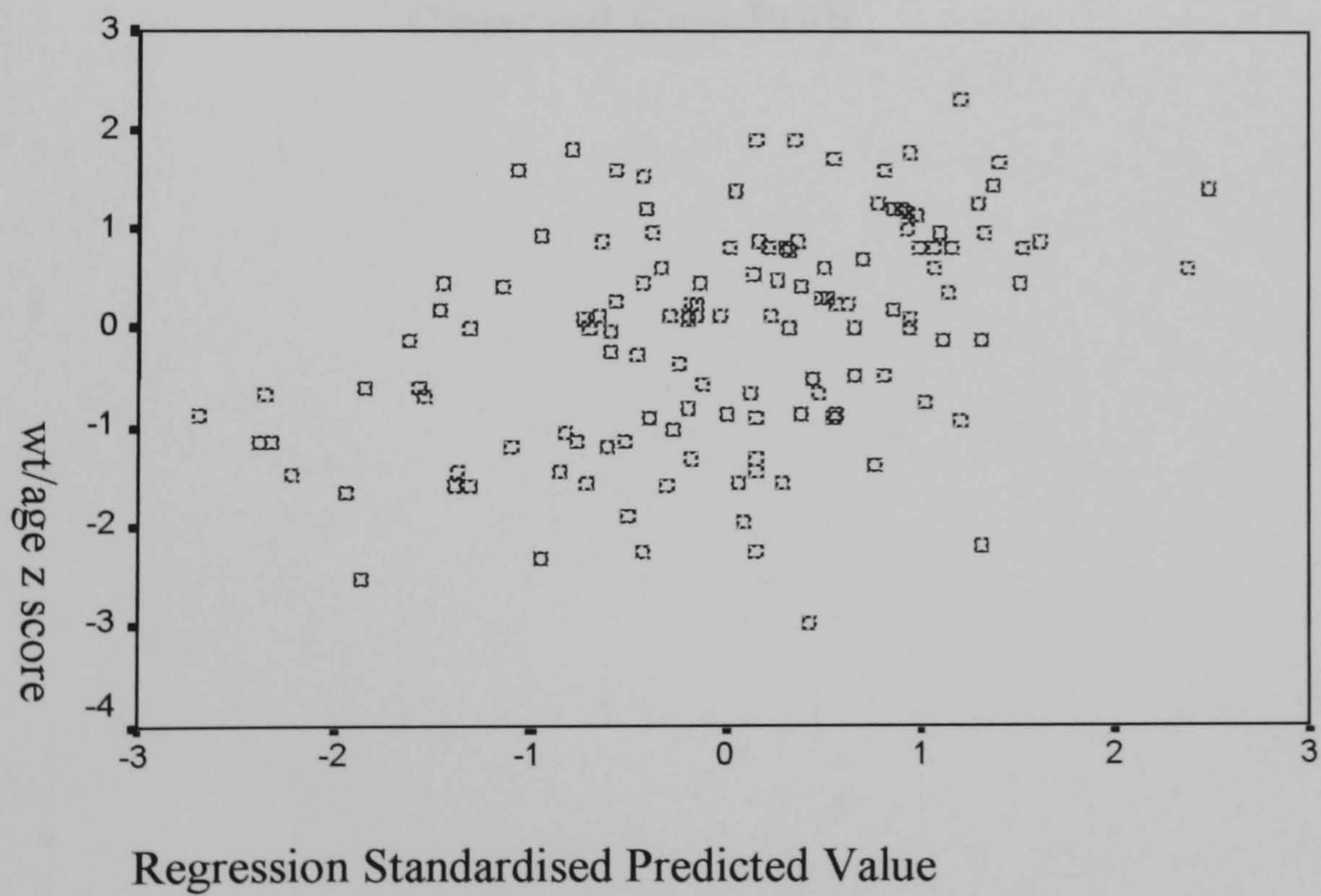
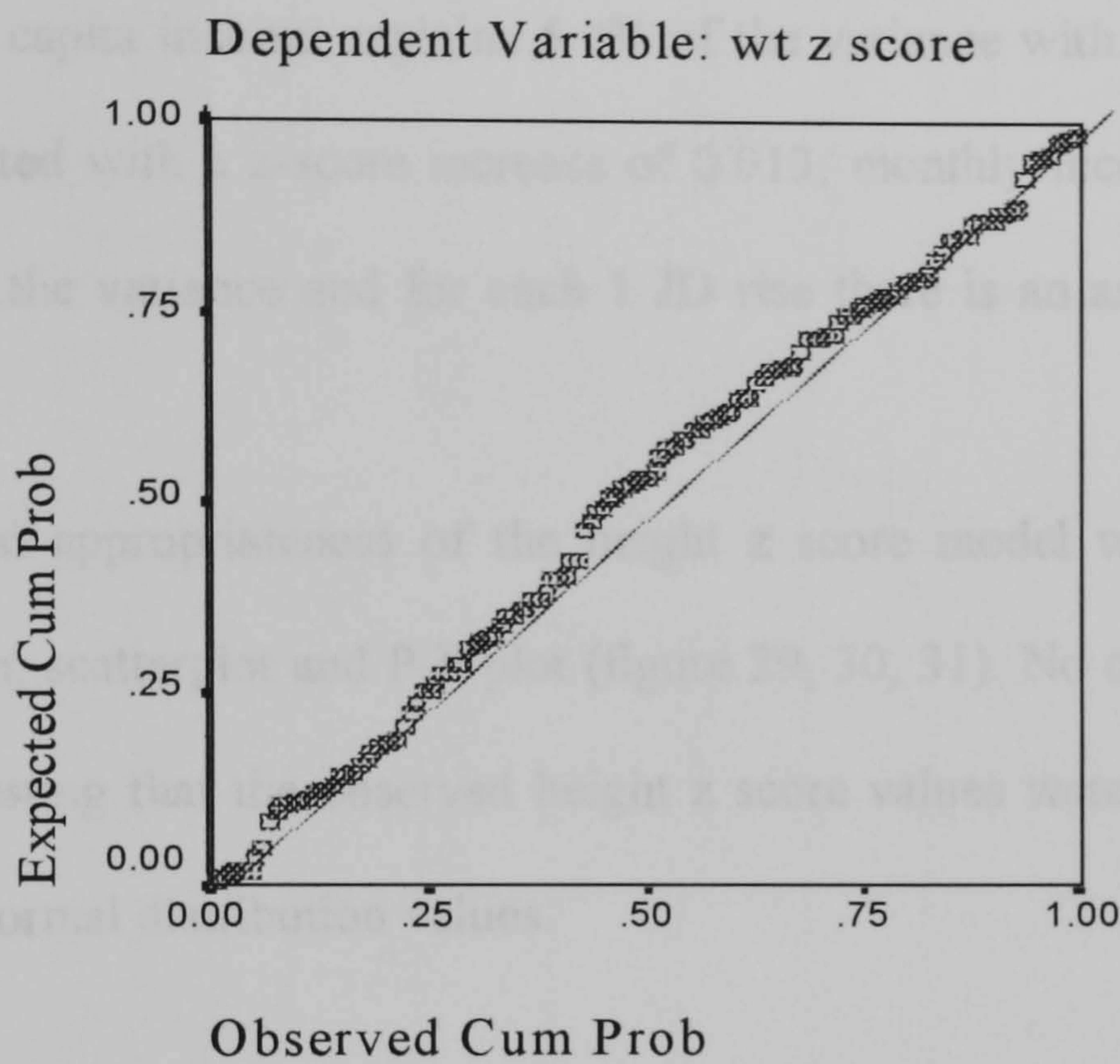




Figure 28. Normal P-P Plot of Regression Standardised Resid





For height z-score (table 41) the regression model explains 20.1 percent of the variance ( $R^2 = 0.201$ ): duration of work in years explains 9.1% and each year of work is associated with a z-score reduction of 0.314; maternal height explains 6.0% of the variance and one centimeter increase is associated with an increase in z-score of 0.067; family per capita income explains 5.0% of the variance with an increase of 1 JD/month associated with a z-score increase of 0.013; monthly income of the child explains 2.5% of the variance and for each 1 JD rise there is an associated z-score increase of 0.011.

The goodness and appropriateness of the height z score model were assessed by plotting histogram, scatterplot and P-P plot (figure 29, 30, 31). No obvious problems were noted suggesting that the observed height z score values were selected from a population with normal distribution values.

Table 41. Effect of work related variables, maternal height and per capita income on height for age z-score

Independent variables	Unstandardised coefficientB	95% C. I for B	p value	R <sup>2</sup> (% variance Explained by each independent variable)
Duration of work/year	-0.314	-0.479, -0.176	<0.001	0.9.1 (9.1%)
Monthly income of child	0.011	0.002, 0.022	0.043	0.025(2.5%)
Maternal height in cms	0.067	0.022, 0.107	0.001	0.06 (6%)
Per capita income	0.03	0.002, 0.019	0.005	0.05 (5%)
Final model				0.201 (20.1%)



Figure 29. Histogram.Depen.Variable: ht z score

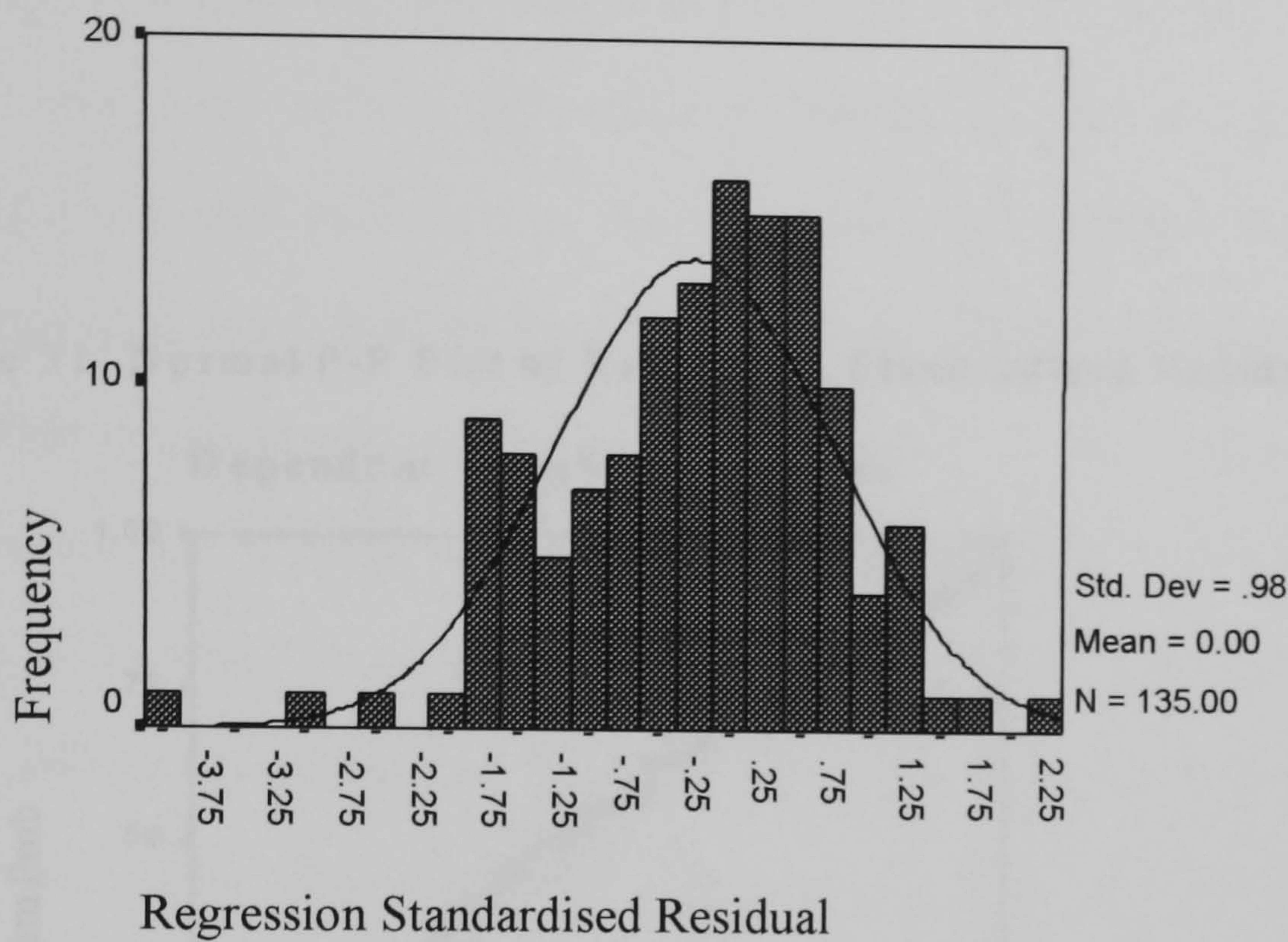


Figure 30. Scatterplot.Depen.Variable:ht z score

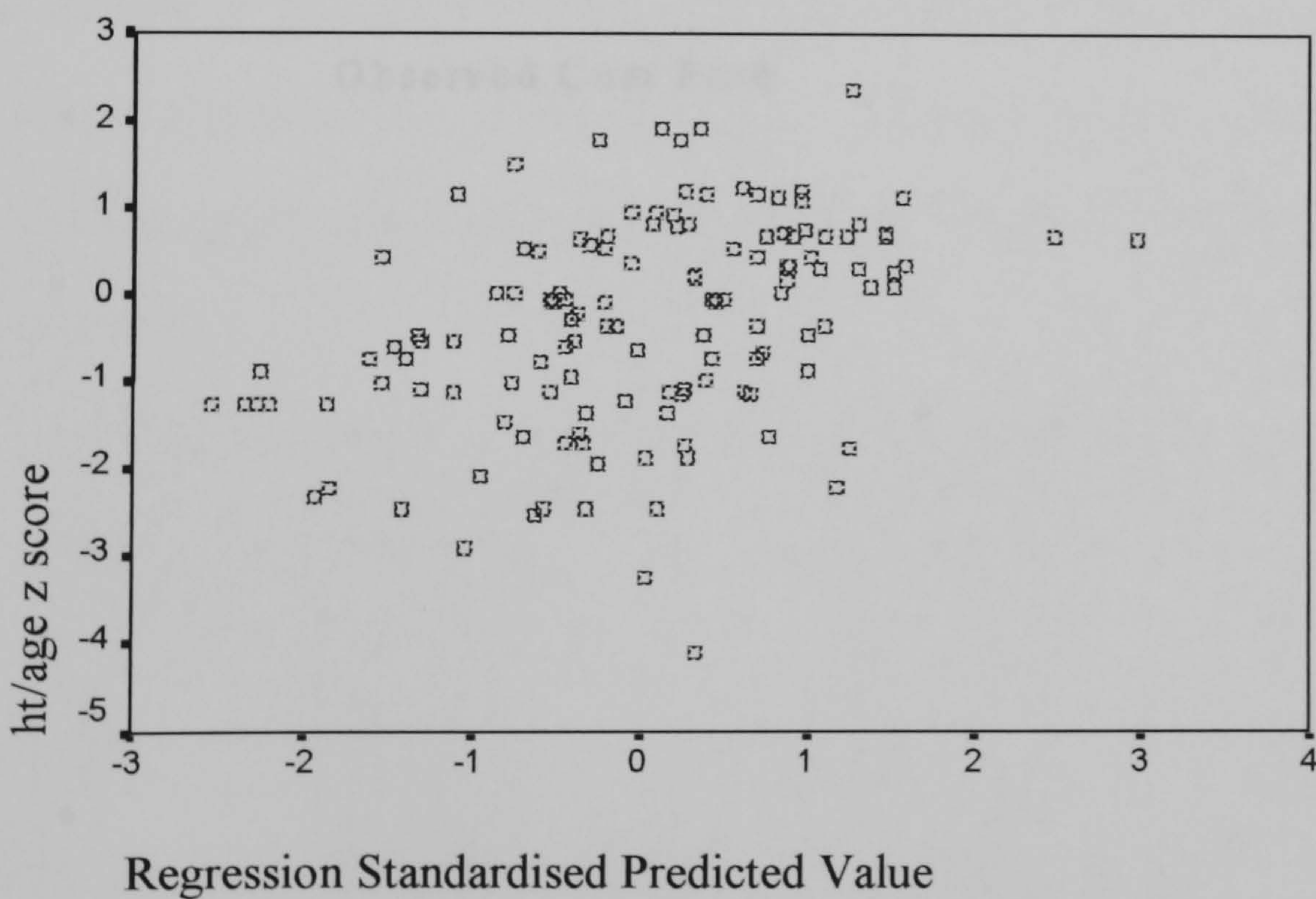
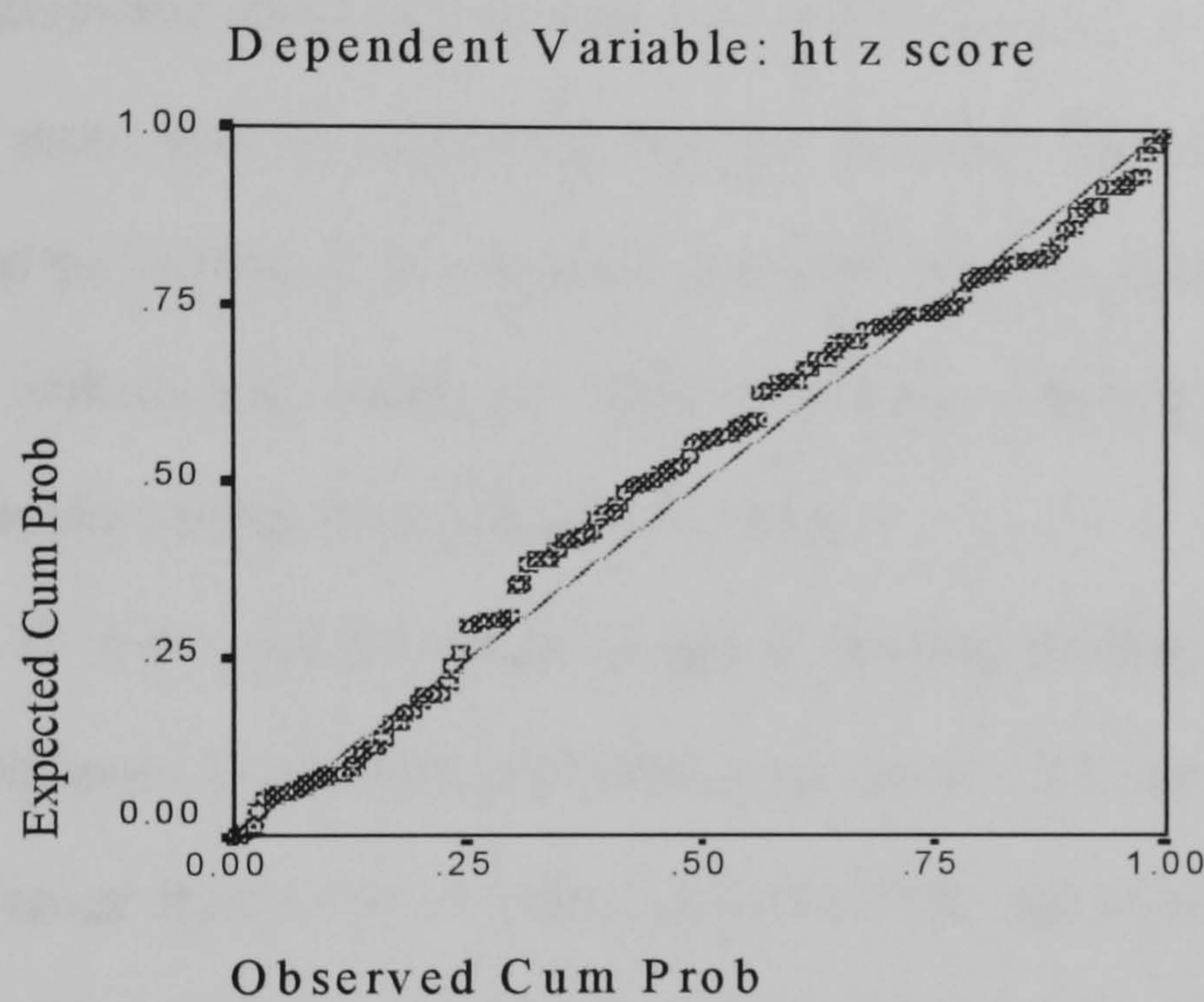




Figure 31. Normal P-P Plot of Regression Standardised Residua



**6.5 Health of working children and their siblings:**

Non-working male siblings (the nearest in age to the working child) of working children who never worked and were aged between 10 and 16 years were recruited as a second control group. Assuming that working children and their siblings grew up under similar environmental conditions and household practices, the confounding effect of socioeconomic and the previous nutritional status on the health status will be minimized. Not all working children had a sibling pair because the working child sometime was either the only child in the family or the age of siblings was outside the appropriate range. Therefore, only 103 working children had siblings who had never worked.

Table 42 shows that the profile of age of working children and their sibling is quite different. The mean age of sibling was about 12.9 years (CI=12.68, 13.12) with a range from 10 to 15 years, while the mean age of working children was about 13.36 (CI=13.1, 13.62) with a range of 11 to 15. The mean age of the working group was significantly higher than that of their siblings ( $t=2.67$ ,  $p=0.008$ ).

Table 42. Age profile of working and non-working children

	<b>Working (no=103</b>	<b>Sibling (no=103)</b>
<b>Age</b>	<b>Count (%)</b>	<b>Count (%)</b>
10-11	13 (12.6)	12 (10.8)
12	13 (12.6)	23 (22.3)
13	27 (26.2)	37 (35.9)
14	24 (23.3)	24 (23.2)
15	26 (25.2)	7 (6.80)
Mean* (CI)	13.36 (13.1, 13.62)	12.9 (12.68, 13.12)
Range	11 to 15	10 to 15

*\* $t=2.67$ ,  $p=0.008$*



### 6.5.1 Weight and height

Table 43 shows that weight for age z score had a mean of  $-0.06$  (CI= $-0.28, 0.15$ ) among working children with a range of  $-2.96$  to  $2.32$  while it was about  $0.7$  (CI= $0.56, 0.84$ ) with a range of  $-1.07$  to  $2.21$  among their siblings. The mean of the later group was significantly higher than that of working subjects ( $p<0.001$ ). When the comparison was made between the siblings and non-working group the mean z score of siblings was also significantly higher ( $p<0.001$ ) than that of non-working children (table 44)

The weight for age z score of 99% of siblings was equal or more than  $-1$ SD and none fell below  $-2$ SD. In the case of working children 5% of them were wasted (weight z score  $<-2$ SD) and 16.5% had z scores between  $-1$  and  $-2$ SD.

Working children were significantly more likely to have a weight z score less than 0SD compared with their siblings (OR=3.8(CI=1.92, 7.62)) (table 45).

Height for age z score of working children ranged from  $-4.12$  to  $2.35$ SD for working children and from  $-1.86$  to  $2.35$  for their siblings (table 43).

The mean height for age z score of working children was  $-0.28$  (CI= $-0.51, -0.04$ ) of the mean for UK children, while siblings had a mean of  $0.67$  (CI= $0.50, 0.84$ ). This difference is highly significant as shown in table 43 ( $p<0.001$ ).

When compared with the comparison group of non-working children, the mean weight z score of siblings of working children was significantly higher ( $p<0.001$ ) than this group (table 44).



The study also showed that 71.8% of working children had height for age z scores equal or above  $-1SD$ , while 97.1% of siblings had similar height for age z scores. The proportion of working children who fell below  $-2SD$  (stunted) was about 7.8%, while none of the siblings were stunted (Table 43).

Siblings were significantly more likely to have better nourishment (height z score more than 0SD) compared with working children ( $OR=4.65(CI=2.41, 9.05)$ ) (table 45).

### **6.5.2 Packed cells volume (PCV)**

The study showed that PCV of working children ranged from 29 to 47, while the range among siblings was 32 to 46. Working children tended to have lower level of PCV compared with their non-working siblings. The mean was 37.1 ( $CI=36.3,37.8$ ) while it was 40.4 ( $CI=39.8,41.1$ ) among their siblings. The difference between the two means was statistically significant ( $p<0.001$ ) (table 43). When the comparison was done between siblings and non-working group the difference between means was not significant (table 44).

A higher proportion (32.7%) of working children were anaemic ( $PCV<36$ ) [UNICEF, 1994] compared to their siblings (7.8%). This difference was highly significant as shown in table 45 ( $OR=5.01(CI=2.36, 14.51)$ ). Proportion of children with PCV more than 42 was higher among siblings compared with working children (53.4 and 22.8% respectively). while a small difference was detected when the PCV ranged between 36 and 42 (44. and 39.8%) (table 43).

### **6.5.3 Skinfold thickness/age percentile:**

The study showed (table 43) that working children and their siblings had similar ranges of skinfold thickness percentile while the mean in siblings (38.35(CIs=34.28, 42.42)) appeared to be slightly higher than working children (36.4(CIs=31.52, 41.28)). This difference was not statistically significant ( $t=0.603$ ,  $p=0.54$ ).

The study also showed that most working children and their siblings (67 and 76.7% respectively) were equal or below the 50<sup>th</sup> percentile of the British standard, but the highest proportion of siblings (39.8%) tended to be between 25 and 50<sup>th</sup> percentile while the highest proportion of working subjects (29.1%) were between 5 and 25<sup>th</sup> percentiles.

Working children were more likely to fall below the 5<sup>th</sup> percentile of the British standard than their siblings (13.6 and 9.7% respectively).

Table 43. Health variables characteristics among working children and siblings

Health variable	Working (no=103)		Sibling (no=103)		t (p value)
	Count	%	Count	%	
Wt z score level					
>(1 z score)	15	14.6	35	35	
0 to 1	42	40.8	49	47.6	
<0 to -1 z score	24	23.3	17	16.5	
<-1 to -2 z score	17	16.5	1	1	
<-2 z score	5	4.9	0	0	
Mean (C I)	-0.06 (-0.28, 0.15)		0.7 (0.56, 0.84)		5.9 (0.000)
Range	-2.96 to 2.32		-1.07 to 2.21		
Ht z score level					
>(1 z score)	13	12.6	35	34	
0 to 1	34	33	47	45.6	
<0 to -1	27	26.2	18	17.5	
<-1 to -2 z score	21	20.4	3	2.9	
<-2 z score	8	7.8	0	0	
Mean (C I)	-0.28(-0.51, -0.04)		0.67 (0.50, 0.84)		6.4 (0.000)
Range	-4.12 to 2.35		-1.86 to 2.35		
Packed cell volume					
< 36	33	32.7	8	7.8	
36 – 42	46	44.6	41	39.8	
> 42	24	22.8	54	53.4	
Mean (CI)	37.05 (36.32, 37.78)		40.4 (39.75, 41.05)		6.7 (0.000)
Range	29 to 47		32 to 46		
Skinfold thickness percentile					
<5	14	13.6	10	9.7	
5-25	30	29.1	28	27.2	
26-50	25	24.3	41	39.8	
51-75	28	27.2	22	21.4	
>75	6	5.8	2	1.9	
Mean (CI)	36.4(31.52, 41.28)		38.35(34.28, 42.42)		603(0.54)
Range	2 to92		2 to 95		



Table 44. Comparison between wt z score, ht z score and pcv of non-working children and siblings

Health variable	Non-working (no=405)	Sibling (no=103)	<i>t</i> (p value)
<b>Wt z score</b>			
Mean (C I)	0.25 (0.18 , .32)	0.7 (0.56, 0.84)	5.78 (0.000)
<b>Ht z score</b>			
Mean (C I)	0.17 (0.10 , 0.24)	0.67 (0.50, 0.84)	6.1 (0.000)
<b>Packed cell volume</b>			
Mean (CI)	39.9 (39.68, 3)	40.4 (39.75, 41.05)	1.19 (0.230)

Table 45 Comparison between wt z score, ht z score and pcv of working children and their siblings

	Working	Sibling	Odds ratio (CI)	p value
<b>Wt z score level</b>	count	count		
≥ 0 z score	85	57	3.02 (1.45, 6.34)	0.001
< 0 z score)	18	46		
<b>Ht z score level</b>				
≥ 0 z score	82	47	3.56 (1.66, 7.73)	0.000
< 0 z score)	21	56		
<b>PCV level</b>				
≥36	85	70	5.01 (2.05, 12.63)	0.000
< 36	8	33		

**6.5.4 Working child income**

In order to detect the effect of the economic contribution of working children on their non-working siblings’ nutritional status, independent of the socio-economic status of their families, working children’s income, occupation of head of the family, per capita income, father’s education, mother’s education, durable expenditure and house m2 per capita were regressed on each growth parameter of siblings (wt z score, ht z score, PCV and skinfold thickness percentile).

The analysis did not show any statistically significant correlation between the contribution of children’s income earned from work and weight z score (p=0.1), height z score (p=0.95), packed cell volume (p=0.3) and skinfold thickness percentile (p=0.34) among siblings. (Table 46)

Table 46. The effect of the proportion of household income earned by working child on growth variables of sibling

Health variables of Non-working siblings	Unstandarised coefficients B	P value	95% Confidence Interval for B
Wt for age z score	0.006	0.102	-.001 .012
Ht for age z score	-0.0003	0.95	-.009 .009
Packed cells volume	0.02	0.3	-.016 .050
Skinfold thickness percentile	0.09	0.34	-.096 .275

*Chapter seven*

*Discussion*



## **7.1 Introduction**

The main objectives of the present study are to detect the effect of child labour on the health status of working children indicated by growth (height z-score, weight z-score and skinfold thickness percentile), PCV, peak expiratory flow rate and psychosocial status. The first part of this chapter discusses the socio-economic status characteristics among working and non-working children and how far the socioeconomic conditions of households account for child labour in Jordan and other countries. The second part discusses the associations between health outcome variables and predictor variables in order to determine if the objectives of the study were met. The chapter concludes with a description of the methodological limitations and strengths of the study.

## **7.2 Household socioeconomic characteristics**

### **7.2.1 Family size:**

The findings of the study showed that both working and non-working children came from large families with an average of 9.7 and 8.7 members respectively. These figures appeared to be higher than the Jordanian average (6.4 members). [Department of Statistics, 1997] Some of these families consisted of 30 members. The large size of working and non-working children's families reflected in general the profile of the Jordanian family, which had an average of 6.4 members at the

time of survey. This is related to the high fertility rate in Jordan (5.6). [UNICEF, 1993b]

The study showed that families of working children were significantly larger than those of non-working children. This finding suggests that large families might have higher needs to send their children to work in order to afford the expenses of their basic needs. Another contributing factor might be the high tendency of many people in the community to have large families in order to increase their labour force and consequently their income.

The results from this study support the findings of other studies carried out previously in Punjab [Addison et al, 1997], Bangladesh [Cain, 1977], Nepal [Nag et al, 1978], Senegal [ILO, 1996a], Nigeria [Asogwa, 1986a], Republic of Korea [WHO, 1987b], West Bengal [Banerjee, 1993] and Pakistan [Ahmed, 1991]. All these studies showed that child labour appeared to play an incentive role for high fertility in households since working children's contributions are considered essential to the household economy.

### **7.2.2 Household per capita income:**

The average of household per capita income of working and non-working children (36.44, 39.45 JD respectively) was small and significantly lower than the average of Jordanian per capita income (64JD). [Department of Statistics, 1997] According to this result, it is clear that the low income is a characteristic of household in Jordan as well as in most of the developing countries. This might have resulted

from the discrepancies between the north-south trade. Poverty is common among the families of working and non-working children and this confirms the fact that the study children and their controls were selected from the same area.

Working children came from households with lower per capita income compared with those of non-working children.

This suggests that child labour is more rooted where the households are suffering lower income. The results from the study appeared to be in full agreement with the previous literature, which states that poverty and child labour are closely linked. [Banerjee, 1991a] [Banerjee, 1991b] [Das et al, 1992] [Mitra, 1994] [Kahveci et al, 1996] This suggests that most children are forced to join the workforce for economic reasons and on occasions the survival of the families may largely depend on the wages of their children. On the other hand, sending children at an early age to work, without enough education and preparation, will reflect negatively on their performance and earnings in the future and consequently future generations of children will be sent to the pool of child labour market in order to ensure the survival of the family.

### **7.2.3 Parents' education:**

The study showed that parents of working and non-working children had lower education levels either illiterate or having achieved only primary or secondary school education. The illiteracy rates among parents of both groups in the study were higher than the national figure. This suggests that those working children and



their counterparts were coming from similar backgrounds. The better education and lower illiteracy rate among parents of non-working children compared with those of working children suggest also that parental education level is likely to be an important determinant of child labour prevalence.

Child labour practice is increased among the households when the parents are low educated or illiterate. This conclusion is supported by other studies which demonstrate that child labour and illiteracy or low education level among parents are usually interrelated. [Addison et al, 1997][Das et al, 1992] [Kerpelman, 1996]

The significant correlation between child labour and education level among parents suggests that illiterate or low educated parents might encourage their children to leave school at early age and enter the labour market where they can learn skills and gain experience for the future while educated parents encourage their children to continue their education because they understand the importance of education from their own experience.

### **7.3 Work related variables**

The findings of this survey suggest that most children in Jordan start work at an early age. Many of these children (53.3%) start work before the age of 11 years and work long hours (57.2 hours/week) for little income (34 JD/month). This finding might be related to the fact that most employers prefer to employ children at a tender age because they are more obedient and easy to control and consequently, it is easy to extract work from them cheaply.

The view of this study appeared to be in full agreement with several other studies around the world. [Rodger and Standing, 1981][Matoka, 1994][Fyfe, 1989]

Rodger and Standing stated that the owners of carpet factories in Morocco prefer to employ children rather than adults because of their docility, fast fingers, cheap labour, and absence of labour litigation. Matoka reported that children were preferred to adult in Murano glass factory in Venice due to their docility and quick fingers. Fyfe supported this view when he mentioned that children were also preferred to adults in Indian carpet factories, abattoirs, garages and paper selling shops.

The low wages and the long hours of work among working children in Jordan seem to be common to working children all over the world. The current study revealed that more than half the working children (54%) worked for approximately one JD daily or less; some of them were unpaid and worked for free. This finding is supported by many other studies carried out previously in Jordan. [Abboud, 1997], Syria [Hasanein and Meedani, 1999] Egypt [Ramzy, 1998], and Morocco [Ramzy, 1998] Experimental child labour surveys carried out in the rural and urban areas in four countries (Ghana, India, Indonesia and Senegal) [ILO, 1996a], revealed that children were working long hours either for nothing or very low wages. In Ghana, 40% of working children, engaged in trading activities, were working for more than 8 hours per day. More than two thirds of them were unpaid family workers, while the average monthly income of 75% of paid workers was far lower than the national minimum wage. In India, the study showed that most of children (90%) in

the rural areas were engaged within their families in unpaid agricultural activities, while most of children in the urban districts were in trading, services and had earnings lower than the rate in the area.

In Indonesia, most children included in the study were also unpaid family workers and the income of those who were paid was less than 1000 rupiahs per month. In the urban area, children were mostly engaged in trade and services sectors and were working for an average of 40 hours per week, while in the rural area the majority of children were engaged in the agriculture and trade sectors working an average of 26 hours per week.

In Senegal, about 80% of children were unpaid family workers in the agricultural sector while the other 20% were salaried for less than 40 dollar per month. [ILO, 1996a]

Asogwa, in his study carried out on 400 working children in Nigeria demonstrated that 30% of working children were working for more than 7 hours per day. [Asogwa, 1986b]

One of the Indian studies [Maheshwari, 1986] showed that most working children were engaged in work as early as 6-8 years. The average working hours per day was about 12 hours and more than 45% were working for an average of 14 hours.

In Madras in India [Sundari et al, 1984], the study of hundred working children under the age of 15 years, revealed that most of children (86%) have to work from 6 to 14 hours per day for very little money (less than 150 rupaih per month).

Records of 210 working children in Malaysia [WHO, 1987a] revealed that most of



them were working for 7 days per week with an average of 10 hours per day.

Many of them started to work at the age of 7 years.

A study in a big slum area of Calcutta (Mitta, 1994), showed that more than half the boys (52.5%) were 10 or less years old. Most of them (85%) worked for more than 10 hours per day, and the majority starting at 8-10 am until 9-11 p.m.

The study in Japur city in India [Joshi et al in 1994] in 23 carpet weaving factories reported that children were working for more than 10 hours per day without rest time. The fact that young children are easily controlled is just one reason for their recruitment. Jordan as well as most of the third world countries has higher number of young children compared to adults. This disparity might be another reason why these children make up the majority of cheap workers.

#### **7.4 Child labour and transnational corporations**

The above mentioned characteristics of child labour may act as an attraction and incentive for the transnational companies to expand their branches to the countries where the child labour force is widely available with poor human rights protection. For example some popular names like Nike, Eddie Bauer, Disney, Arizona and Gitano have been directly linked to child labour. [Katie et al 2001] [Sanders, 2001] These companies may be tempted to employ children to acquire or maintain a competitive advantage in the world markets.

Globalisation and the spread of transnational companies have fuelled calls for a social clause in international trade agreements and this has become a contentious

issue in international trade negotiations.

Developed countries have given much attention to the possibility of using negative economic incentives to discourage child labour in developing countries. [Joint, 1997]

Such interventions may be ineffective and may not help to eradicate or reduce the prevalence of child labour in these countries because most families who send their children to work are suffering economic hardship and the earnings of the children provide an essential income for the survival of their families. This conclusion is in full agreement with the opinion of many people interested in the issue. [Blanchard, 1983][Matoka, 1994][Kerpelman, 1996][ILO, 1996b]

By looking to the issue as a whole, spread of transnational companies in developing countries could be seen as a positive phenomenon since it could offer a chance for the families to improve their critical economic status and any sanction or restriction measures on these companies may exacerbate the critical economic status of families who send their children to work. Consequently these families may find themselves obliged to send their children to work in invisible and illegal activities far away from any control, which exposes the children to even greater exploitation and hazards. This conclusion appeared to be in full agreement with the view of many people involved in the issue. For example, Stephen [Nike, 2001] argues that the best way to end child labour is to buy more of the products that children produce. This would increase their demand, and as they will produce more, they will earn more, hence giving themselves the chance to rise above the

poverty level and thus also benefiting the families of the children and as well as the nation. However, the issue is not that simple. Increasing the demand for the products produced by children labour means encouraging more child labour, encouraging higher birth rates, more slavery, increasing sweatshops and discouraging education- as parents of the children working in factories would want them to work more and earn more. This in turn is likely to lead to more and more children being bought and sold on the black market. By encouraging more child labour, you are not only taking away those innocent years from them but also the right to be educated and the right to be free.

In Jordan the transnational companies are not a problem since the countries of the Middle East are unattractive to these companies because of frequent wars during the last 50 years and lack of stability. Moreover, the labour (including child labour) is not so cheap in Jordan compared with other countries in the third world, and this discourages involvement of transnational companies.



## **7.5 Child labour and health:**

The first 16 years of life are extremely important for a child's physical growth and psychomotor development and work at a young age may have serious consequences.

### **7.5.1 The effect of work and socioeconomic status on weight and height**

The significant regression coefficient of work on weight and height for age z-score and the level of significance detected in the partial model persisting in the full model suggest that, independent of family socio-economic status and the child's smoking status, working has an adverse effect on growth in height and weight among boys aged 10-16 years. Children of the same socio-economic and smoking status who were not working had 0.31 higher weight z-scores and 0.51 higher height z-scores compared to working children. Although the amount of variance in child growth explained by these models is small (<10% for both outcomes), the clinical differences in growth represented by these variances are significant, particularly at a population level, representing about 5.3 cms in height and 250 gms in weight at age 14. Child labour among these Jordanian boys appears to be associated with an increased risk of stunting and wasting independent of family socio-economic status. The most informative indicator of socio-economic status was the house per capita income in the case of weight and per capita house m<sup>2</sup> in the case of height.

It is possible that all other socio-economic variables are captured in the economic status expressed by per capita income and household per capita m<sup>2</sup> whereas better per capita income and household m<sup>2</sup> usually reflect better education, better head of family occupation and higher expenditure.

It is possible that better household economical status (per capita income and per capita house m<sup>2</sup>) may be translated in better nutritional status and consequently translated to taller and heavier children.

Previous studies [Shah, 1985][Satyanarayana, 1986][De La Paz, 1991], support this view and have demonstrated links between work and growth in children. However, most have suffered from methodological problems notably poor adjustment for socio-economic confounding and unrepresentative samples.

The only comparable study [De La Paz, 1991] shows a difference in height and weight between working and non-working boys in the Philippines but this difference did not persist on adjustment for socio-economic status. It is probable that poverty is more profound in the Philippines with the result that its effects on growth may outweigh those of working.

A study [Gross, et al, 1996] of the nutritional status of 89 street children compared with non-working children living with their families in slums in the Indonesian city of Jakarta reported that height and weight were better in the street children. The authors suggest that this may be related to the street children having their own income to spend on food and having more financial resources compared to non-working poor children living with their families. The authors assume matching of

the groups or socio-economic status but it is possible that socio-economic status could be different in those living in the same area leading to residual confounding by socio-economic status. The present study, based on a representative sample stratified for different occupations with a large age-matched comparison group, collected detailed socio-economic status data reducing the likelihood of confounding by socio-economic status.

### **7.5.2 Effect of work on packed cell volume.**

In this as in earlier studies working children tended to have significantly lower levels of PCV compared with their non-working counterparts. The prevalence of anaemia among working children was about 34% compared to 8% among non-working subjects. The high prevalence of anaemia among working children might be explained by the higher and uncompensated requirement of nutrition resulting from the high consumption of energy during the labour. This explanation was supported by the finding that mean PCV was significantly higher among siblings and non-working children (40.4, 39.9) compared with working children (37.04).

These suggestions appeared to be consistent with the hypothesis of other studies on the issue. [Banerjee 1991a] [Mustafa, 1996] Banerjee studied the health and the socio-economic conditions of 759 children working in different sectors in Calcutta. Anaemia was present in more than 60% of working children. Another study carried out by Banerjee in West Bengal and published in 1993 revealed that anaemia prevalence among agriculture working children was about 69%.



A study in Nigeria [Asogwa, 1986b] of 14 part-time working children engaged in a soap factory showed that all of the children were suffering from anaemia. Metha's study in India [Metha et al, 1984] supported the results of the current study reporting that nutritional anaemia is common among working children. According to these results, the high prevalence of anaemia among working children might be caused by the interaction between poverty and child labour.

Findings from the regression analysis of the current study suggest that the work is the main predictor of lower packed cell volume. Working children tended to have 3 units of PCV lower than that of non-working children independent of smoking and socio-economic status. The full model of regression explained about 15% of the variance in PCV; the work variable alone explained about 13% of the variance and all the socio-economic variables and smoking status explained only 2% of the variance.

The reverse association between work and PCV might be explained by two factors. First, the spurt of growth in children which occurs at puberty when the child usually work, and the higher physical activity performed by working children requiring more nutrients to satisfy the requirements for growth during this critical period. In practice, the situation is quite different and working children often do not receive any additional food to satisfy this new demand because they mostly belong to poor families and their small earnings do not permit them to do so. Therefore, working children are susceptible to malnutrition and consequently to low PCV.

### **7.5.3 Skinfold thickness:**

Skinfold thickness percentile was another nutritional parameter used to assess the health status of working children and their controls. The study suggests that non-working children had better skinfold thickness percentile compared to working children, but the majority of both groups (64.2% and 69.6%) did not reach the 50<sup>th</sup> percentile of the British standard.

This was confirmed by the regression analysis, which showed that work, independent of smoking and socio-economic variables, had a significant negative effect on skinfold thickness. Work alone was responsible for about 2.2% ( $R^2=0.022$ ) of the variance of skinfold thickness, while the full model which included all the hypothetical independent variables explained 3% of the variance ( $R^2=0.027$ ). No socio-economic variable appeared to be a predictor for the skinfold thickness. This finding suggests that working children and their controls came from low and similar socio-economic backgrounds.

The low skinfold thickness percentile, which reflects low nutritional status might have resulted initially from the low socio-economic status of both groups of children in the study which was further compromised by the work performed by the working group. This view appeared to be consistent with the results of several previous studies [Shah, 1985][Shah, 1984][Feignold and Wasser, 1994][Satyanarayana et al., 1986] which showed poor nutritional and growth status among working children in various countries.

#### **7.5.4 Peak expiratory flow rate:**

Peak expiratory flow rate for height appeared to be better in non-working children compared with working subjects (2.55 and 2.5). This difference disappeared when the variable was controlled by age except between the youngest children (10-11 years) of both groups in the study where the peak expiratory flow rate appeared to be better in the case of non-working children. When the socio-economic variables and smoking were controlled by regression the effect of work on peak expiratory flow rate became insignificant. Moreover, smoking and socio-economic variables appeared to be also irrelevant. These findings are in contrast with previous studies [Joshi and Sharma, 1996] [Joshi et al, 1994], which suggested that work has adverse effects on lung function. According to these results three explanatory factors might stand behind these findings. Firstly, working children may not be engaged in hazardous work that could affect the lung function. Secondly, it is possible that the duration of work is insufficient to cause changes in lung function. Thirdly, the significant effect of work found in the partial regression was confounded by the smoking variables and socio-economic status of working children included in the full regression model.



### **7.5.5 Morbidity prevalence and work status:**

Morbid conditions relating to the skin (burns and cuts), skeletal system (low back pain and pain in ankles joints), eyes (redness), teeth (dental caries) were significantly more common among working children compared with their non-working counterparts. Working children had a greater than four times risk of having more than one morbid condition compared with non-working subjects (OR=4.28 (2.47, 7.56)).

In order to detect the exact effect of work on morbidity prevalence, regression analysis was performed. The significant effect of work ( $B=-0.70$ ) on the prevalence of morbidity in the partial regression was decreased ( $B=0.539$ ) when the socio-economic status and smoking variables were controlled in the full regression model.

This suggests that the effect of work might be confounded by the socio-economic variables. The socio-economic variables with most effect on morbidity prevalence were durable expenditure and per capita house  $m^2$ . Together with work, they explained most of variation in morbidity prevalence.

The high prevalence of morbidity among working children might be related to their vulnerable age, work hazards or to the work environment. For example children are much more likely to be injured because tools, stairs and machinery are not designed for child proportions.

The complaints of knee and back pain by working children may have an

aetiological relation to prolonged sitting in a fixed posture or to lifting heavy loads.

The general conditions under which children work are often in themselves serious threats to health. There may be inadequate ventilation, heating and lighting, excessive crowding, long hours with inadequate rest periods and monotonous tasks performed in one position. These conditions may also explain most of the health problems among working children in this study.

The high prevalence of dental caries among working and non-working children (52, 37.5% respectively) might be attributed to the poor nutritional and hygiene status. The discrepancy between the prevalence rate of dental caries of working and non-working children might be also attributed to the better dental health care provided to the school children (non-working children) by the school health team.

The findings of this study appeared to be congruent with previous studies carried out in different parts of the world. A study carried out in India [Mitra, 1993] to assess the nutritional status and the prevalence of morbidity among working children in Japiur city revealed a significantly higher prevalence of backache, lower limb pain, headache and acute respiratory infections among working children compared to the controls. A study in Calcutta [Banerjee, 1991a] reported that low back pain and ankle pain were found in a significantly higher proportion in working children compared with the non-working group. An other study in India [Banerjee, 1993] showed that more than 30% and 16% of working children were respectively suffering eye diseases and injuries.

In a survey of child labour in Israel [Addison et al, 1997] more than 42% of a

group of working children between 8 and 15 years in Tel Aviv and Jerusalem had visible cuts, minor lacerations, burns and dental decay.

A study in Jaipur city in India [Joshi et al, 1994] showed that working children were significantly more exposed to backache and lower limb pains compared to the non-working controls, while conjunctivitis had a similar prevalence in both groups of the study.



## 7.6 Psychosocial status

The findings of the study suggest that, independent of the socio-economic variables, working and smoking have an adverse effect on the psychosocial status of children. Children who work were more likely to have worse psychosocial status (higher psychosocial score) compared with non-working children when the smoking and socio-economic variables were controlled ( $B=-13.92$ ,  $CI=-15.19$ ,  $-12.64$ ,  $P=0.000$ ). Although work tended to explain most of the psychosocial status variance, 46 % ( $R^2=0.46$ ) of the variance was attributed to the work while the full model which include smoking and socio-economic variables explained 51% ( $R^2=0.506$ ) of the variance. Smoking also emerged as a negative predictor of psychosocial status of children being responsible for about 3% of the variance.

There is very little published work on the psychosocial impact of child labour. The only systematic study on the issue was the unpublished survey carried out by WHO on four groups of working children in Kenya. [WHO, 1987e]

This study suggested that working children were highly exposed to psychosocial problems. Withdrawal, regressive behaviour, premature ageing, depression, inferior status of self-esteem, fatalistic attitude, high emotion with low creativity and excessive use of coffee, cigarettes and alcohol were the most common adverse psychosocial symptoms among working children. The high prevalence of psychosocial problems among working children in Jordan could be explained by many factors.

The first factor might be related to the fact that working children are at risk of inadequate time for education, leisure and recreation, which are essential for their psychosocial development. In addition, time for social life is likely to be limited by long working hours. The second reason could be related to work and its circumstances, which forms, with the low socio-economic status, another psychosocial stress factor on the working children. The shortage of family supervision and support and the hard discipline of the employers might constitute other stress factors, which affect the psychosocial status of the child workers.

## **7.7 Work related variables and growth**

The results of this study suggest that, independent of maternal height and family socio-economic status, work-related variables, such as age of starting, duration of work and monthly income of working child have an effect on growth in height and weight. Since working children were shorter and lighter than non-working children, it is assumed that working for longer duration and more hours would result in shorter and lighter children. There is a plausible physiological explanation for these findings. The higher physical activity associated with work requires additional nutrients to compensate for additional calorie consumption especially during periods of enhanced growth such as puberty. If the child's income is required to supplement household income, it is probable that insufficient compensatory calories will be available for normal growth. The finding that growth differences between working and non-working children did not become established

until after 8 years of age [Joshi et al, 1994] lends support to this explanation.

The study showed that the growth among working children was better when their income was higher. This finding appeared to be supported by the previous literature. The study of street children in Jakarta [Gross et al, 1996] showed that the growth of working children was better than that of non-working children from the same poor neighbourhoods. The authors suggest that the street children were able to use their incomes entirely for the purchase of additional calories rather than sharing them with other household members. Further support was obtained from the study in the Philippines [De La Paz, 1991] which showed that working children had better growth than their non-working counterparts. The possible explanation for this phenomenon might be related to the employers' preference of hiring healthy children in order to obtain better work outcomes. A study in Bombay [Naidu and Parasuraman, 1985] reported that most employers tended to employ physically fit and healthy children whose chances of getting sick were minimal. An additional explanation could be that those children who work more hours and weeks might have a better chance to earn more money, which permits them to purchase more food reflecting positively on their growth.



## 7.8 Growth and health among working-children and their siblings

A further way of examining the consistency of the results of this study is by studying the nutritional status (measured by height, weight, PCV and skinfold thickness) of working children in comparison with their non-working siblings (nearest in age to the working child). Confounding by current family socio-economic status, maternal height and other familial factors is minimised by the use of sibling as a comparison group.

Siblings appeared to be significantly younger than working children; the mean ages were about 13.36 years for working children and 12.9 for their siblings ( $t=2.67$ ,  $p=0.008$ ). This would suggest that the families usually send the first or the second child (rarely the youngest siblings) to work. This might enhance the view of other studies [Asogwa, 1986a][ Asogwa, 1986b] which stated that the older children have the responsibility with their parents to keep the rest of the family going.

The study also suggests that siblings have better nutritional status than working children; the mean weight z score was  $-0.06$  (CI= $-0.28$ ,  $0.15$ ) among the working group and about  $0.7$  (CI= $0.56$ ,  $0.8$ ) among siblings. No sibling fell below  $-2SD$  of the British standard while 5% of working children appeared to be wasted ( $<-2SD$ ).

Working children were shorter than their siblings with mean height z score of  $-0.28$  (CI= $0.51$ ,  $-0.04$ ) compared with  $0.67$  (CI= $0.50$ ,  $0.84$ ) among their siblings. 10% of working children were stunted but no sibling was similarly affected. Packed cell volume (PCV) among both groups reflected also the better nourishment of

siblings compared to the working group; the mean PCV of siblings (40.4) was significantly higher ( $p=0.000$ ) than that of working children (37.4); moreover the prevalence of anaemia ( $PCV \leq 36$ ) was significantly higher among working children (32.7%) compared with their siblings (7.8%).

Finally, the analysis of skinfold thickness/age percentile supports the above mentioned results revealing better nutritional status of siblings compared with the working children. But the majority of both groups appeared to be under the 50<sup>th</sup> percentile of the British standard.

According to the above results it is reasonable to conclude that work has a strong negative effect on the growth of children since working children and their siblings grew up under similar environmental conditions and household practices where the confounding effect of socio-economic and the previous nutritional status are minimised.

The relative improvement in growth, packed cell volume and skinfold thickness among siblings could not be explained by the income working children contribute to the household because the outcomes studied were not correlated with the proportion of total household income contributed by the earnings of the working child (see table 46). It is possible that the relative improvement in nutritional status among siblings is confounded by a systematic tendency for non-working siblings to receive preferential treatment compared with working children. Although data related to this potential confounder were not collected, the child labour literature does not support this interpretation.

It suggests that working children are valued by the families for their economic contribution and are differentially selected by employers for their physical fitness and reduced chance of falling ill. [Asogwa, 1986a] The current study suggests that the previously noted association between child labour and impaired growth and health is likely to be independent of confounding by socio-economic status although confounding by other factors cannot be fully excluded.



## 7.9 Limitations of the study

The current study appeared to have several potential limitations in all its phases.

The absence of accurate information about the population census in Jordan formed the first limitation of this study. Jordan absorbed an almost ten percent population increase in the form of the returnees from the Gulf States which made the estimation more difficult and inaccurate. The absence of any accurate official census about working children in Jordan was another limitation in the study. However, the researcher accepted the estimates of Fergany's study [Fergany, 1993], which predict at least 100,000 children under 16 years are engaged in work in Jordan, and 25,000- 30,000 children in the study area.

Working children in Jordan as well as all over the world are movable from area to another and usually do not have a fixed job. This made it more difficult for the researcher to estimate the extent of child labour and the nature of the activities in which children are engaged. However, the researcher overcame this problem by visiting and walking around the hypothetical sites of child labour (defined by the key people in the study area) at least twice before starting the sampling. This gave the researcher more chance to detect the actual size of the problem of child labour and the nature of the jobs.

The assumption of normality of the variable data included in the study was not completely reliable since some of these variables were slightly skewed from the normal distribution. Consequently, this made the use of t-test, correlation and

regression more difficult and less reliable. Missing data was not a big problem in this study. Only five blood samples and two maternal heights were not obtained during the data collection due to the refusal of those subjects. Consequently these missing data (PCV and maternity height) were replaced by the mean of the variables since these variables were normally distributed and the analysis will not be affected by this procedure. [SPSS, 1998]

The analysis of multiple variables is more likely to produce statistically significant associations by chance. However, in this study many highly significant probability (p) values as well as narrow confidence intervals were obtained. These reduce the likelihood that the results were obtained by chance.

The independent effects of working on growth, PCV, morbidity and psychosocial status of working children was difficult to isolate because of the confounding effect of numerous variables on these parameters as well as on work status.

The socio-economic status and the previous nutritional status appeared to be the strongest confounding factors, which threaten the internal validity of such a study, since malnutrition and morbidity might have been established before children started to work. To overcome such problems, socio-economic variables were included in the multiple regression analysis, which enabled collinearity between independent variables to be diagnosed and adjustment of their confounding effects. Even though an attempt was made to control the confounding effect of the previous nutritional status by recruiting Non-working siblings as a comparison group the confounding factor may not be completely controlled because the

average age of siblings was significantly lower than that of working children. Although the survey attempted to identify a representative sample of working children, it is likely that the sample does not fully represent the extent of child labour since many working children are engaged in domestic and invisible activities. This may form an obstacle to the generalisation of results to the whole of Jordan.

In addition, the survey relies on the recall memory of children and parents, so it is possible that there has been systematic under-reporting of some work-related and family socio-economic characteristics. It is impossible to verify such details in a survey of this nature and some caution should be exercised in interpreting the results.

Owing to the absence of a national anthropometry standard in Jordan the researcher used the British height for age z score, weight z-score and skinfold thickness percentile as a standard reference in this study. Since the anthropometry of children is usually affected by the general prosperity in the country it is obvious that the British standard of anthropometry should be better than the Jordanian one. Consequently, it was not possible to assess with accuracy the amount of deterioration in the nutritional status of working children in relation to the actual nutritional status of the population in Jordan.

Socio-economic variables were the main confounding factor of the health status in this study. To overcome this problem the researcher selected both study and control groups from the same area with similar gender and age group. This may



minimise the confounding effects of socio-economic variables assuming that people living in the same environment are exposed to the same conditions and usually, but not necessarily, have similar socio-economic status. In order to overcome the problem of residual confounding of the health outcome variables by smoking and socio-economic status, all the hypothetical socio-economic variables and smoking status were included in the various regression models which permits the adjustment of the statistical confounding effect of such variables on the outcomes studied. Accordingly, the effect of work on the various health outcome variables independent of socio-economic status and smoking could be estimated with greater certainty.

### **7.10 Study strengths**

The current study has a number of strengths, which lend support to the plausibility of its findings. Strong associations were observed in relation to the main objectives of the study.

The results reported in this study were also consistent with those previously published by a number of different researchers using different methodologies over the last two decades.

The results of the study are also biologically plausible in that working children are at greater risk of growth impairment because they require more food in order to satisfy the high consumption of energy during the work. In practice, working children often do not receive any additional food to satisfy this new demand

because they mostly belong to poor families and their income is insufficient to compensate.

This study overcomes many of the problems noted in previous studies. The use of an appropriate study design with additional data coming from comparison with non-working siblings and statistical techniques (regression analysis) allowed adjustment for the effect of confounding variables especially socio-economic status. The health measurements were valid, reliable and, except for the PCV, non-invasive. A clear definition of child labour was employed which made the sampling procedure easier and more accurate. The study area chosen has a wide range of different types of community, a fair geographical spread, and a wide variety of economic activities. Thus, it might provide a realistic indicator of the national status of child labour allowing generalisation of the results to Jordan as a whole.

*Chapter eight*

*Summary*



## 8.4 Conclusion

To my knowledge this study is the first systematic work which tries to provide a detailed account of the relationship between the health status and child labour among working children in Jordan. The study is also the first to describe in detail the contribution of the work and the socio-economic variables to the variance in different health indicators.

According to the findings of this study, it is clear that malnutrition (underweight, short stature, low skinfold thickness and anaemia) is common in working children, siblings and non-working children.

Working children had worse outcomes than their non-working counterparts and siblings.

The amount of work (duration of work, work hours/week) is associated with growth impairment. This effect appears to be also independent of family socio-economic status and maternal height. The response to the amount of work appears to be congruent with what was expected. This provides another way to ascertain the consistency of the study results, since longer duration of work and more working hours have significant inverse relationships with the growth of working children. The strong adverse effect of work on the psychosocial status of working children, independent of the child's smoking status and socio-economic variables, suggests that working children exposed at an early age to the stresses of adult life without little preparation. Consequently, they become highly exposed to

delinquency and abuse, which affect negatively their psychosocial status.

Even though the study attempted to control the effects of socio-economic variables in order to assess the proper effect of work on their health and psychosocial status, the attempt might not have succeeded fully because of the differences between the socio-economic status of children may be variable within the same group. Also socio-economic variables may have a profound effect on both the health outcomes and on the work status of children at the same time making it difficult to disentangle their separate effects.

## **8.2 Recommendations:**

The results of the current study and the literature show that the problem of child labour is extensive and there is an urgent need for action. Jordan, in common with most developing countries, is not financially and institutionally prepared to put an end to the phenomenon at once as child labour and poverty are intertwined and the earnings of working children are essential for their families' survival. Therefore, the most logical and acceptable strategy in Jordan could be to focus on the eradication of the most intolerable forms of child labour and the protection from hazardous occupations, exploitation and abuse of those, especially the very young, who continue to be economically active. To approach this strategy, five levels of action should be taken:

### **8.2.1- Making child labour visible:**

The problem related to the size and nature of child labour in Jordan should be addressed. Working children are usually engaged in invisible hazardous work, which is likely to endanger their health. To achieve visibility, a national survey should be carried out as soon as possible forming an essential point of departure for any action for elimination or at least decreasing the incidence of hazardous work among children. The Ministry of Labour in Jordan, which is on the first line of combating the phenomenon of child labour and has the resources, could



undertake a national survey offering reliable data on the issue necessary for practical action.

Non-governmental organisations (NGO's) may have a very important role and should be encouraged to be involved. A national meeting with the participation of representative members from the Ministry of Labour, Ministry of Education, Ministry of Social Affairs, NTFC, ILO, UNICEF and international NGOs should be organised. The meeting could provide information to assist the establishment of a child labour survey in Jordan. The Task Force for Children (NTFC) could take a leading role due to its previous experience in this field.

For this purpose, Jordan can adopt one of the two instruments developed by ILO to assist countries to improve their information base on child labour: a statistical survey methodology and a rapid assessment technique. Both instruments were tested in different parts of the world and enabled the countries to obtain general and specific quantitative and qualitative information about child labour. [ILO, 1995a][ILO, 1996a]

### **8.2.2- Enforcement of legislation:**

The practice of hiring young child workers is known to exist in Jordan despite law prohibiting children below 16 years from work. This might be partly related to shortage of surveillance and detection of child labour resulting from inadequate numbers of child labour inspectors or due to lack of transport to reach the areas where child labour is commonly used.

Therefore the researcher suggests to the Ministry of Labour in Jordan that more attention could be given to such issues by recruiting more expert inspectors and allocating more infrastructure to facilitate and carry out their responsibility.

The increasing trends in the recruitment of child labourers in the last 10 years and the high rate of participation among employers (64 out of 67) and parents (100%) in the study would suggest that the law and conventions (UNCRC and ILO convention) against child labour are not well enforced in Jordan.

The researcher suggests that one of the measures that could be taken to enforce legislation against child labour is making children and their parents aware of their rights, and making legal and administrative procedures more accessible to them.

Action should be also taken against any firms or persons who employ children in conditions that violate national laws or that adversely affect children's education, health or development.

For this purpose, a national conference could be held with the participation of psychologists, lawyers, police officers and representatives from the Ministries of Labour, Education, and Social Development. Such a conference would discuss in detail the laws with the aim of formulating strategies and policies, which could first of all enhance the implementation of international conventions ratified previously by the nation and put in practice the measures and actions previously mentioned.

### **8.2.3 Enforcement of education system**

Theoretically education is compulsory in Jordan for the first 10 years of school but unfortunately the situation in practice is different. Drop out from school during this period is quite common and usually no action is taken. This is because some parents may lack faith in education and consequently they encourage their children to leave school and engage in work where children can learn skills and gain experience for the future. Drop out from school may be due to the difficult economical status of parents who cannot afford the expense of their children's education. The relatively high illiteracy rate among parents may also be a determinant of child labour since these parents do not see the benefit of education in life.

Good quality of education afforded by schools and their role in controlling the attendance of pupils might form one of the most relevant ways to eliminate child labour or at least reduce children's working hours. Educated children will decrease the incidence of child labour in the long run when they become adults because usually educated people are more aware of the dangers of child labour.

According to that, the researcher suggests that Ministry of Education revise the education curriculum of the compulsory years aiming at integrating more recreational and entertainment programmes and projects for school children. Such programmes could, for example, include courses of computer science, music, art and sport which an incentive for children to attend school.



The Ministry of Education could introduce an educational programme about the phenomenon of child labour in the official curriculum in Jordan. The programme would aim to raise the children's awareness of the health and social impact of child labour on children and the community as a whole. The researcher suggests that the Ministry of Education and UNICEF together with school children could hold an annual conference about child labour. The main objective of such a conference would be to formulate national strategies and plans aiming at protecting children from the danger of child labour.

### **8.2.4 Economical support**

In Jordan the enforcement of law and the improvement of education alone are unlikely to work. Simply making schools available and improving their quality will not be sufficient to overcome all the problems faced by the poorest families. The hard economic condition of the families and the high rate of unemployment among the people force them to send their children to work. Child labour cannot be eliminated without action to address poverty. Laws and schools are important, and necessary, but they will fail if they are not supported by a commitment and a programme of action to deal with poverty. For this reason, the government in Jordan (Ministry of Education, Ministry of Social Development and Ministry of Health) may have the critical role in decreasing the impacts of poverty by sustaining the delivery of basic social services – comprising basic education, primary health care including reproductive health and population programmes and

nutrition programmes. Economic incentives that support or compensate families for the loss of income when children go to school rather than work will be required. Incentive schemes exist in various forms, ranging from cash stipends to in-kind incentives such as free school meals, health care, stationery, textbooks, clothing or the waiver of school fees may have an excellent role which can keep families running without the need to send their children to work.

### **8.2.5 Health services improvement**

There is no doubt that child labour threatens the health of working children and leaves them stunted, wasted, anaemic and exposed to various health hazards as lung diseases, skin lesions, and eye infections. For this reason, the researcher suggests that health services should take their role by providing free health services for working children since this group is the most vulnerable group in the community and keeping them healthy is important since they are future of the country. Because the phenomenon of child labour in Jordan is widespread, all the medical institutions should be involved. The Society of Paediatricians in Jordan should give more attention for the issue of child labour and consider it as a main subject to be discussed in its annual national conference. Such an objective could be achieved by encouraging the paediatricians to present much more papers and research on the issue of child labour and highlight their roles in minimising its health impact.

### **8.2.6 Actions which could be taken immediately**

The total eradication of child labour is impossible, since the earnings of the child are an essential part of the household economy in Jordan. However, protection of children at work could be achieved by the following actions:

- Better data need to be collected to define the extent and severity of problem of child labour and its associated injuries and illnesses. These data permit identification of particularly dangerous industries and occupations.
- A clear national policy against the exploitation of children is the fundamental basis and point of departure for governmental action to suppress hazardous child work.
- Hazardous jobs need to receive special attention by inspectors and the relaxation of certain labour regulation should be stopped.
- Work permits should be obtained for recruitment or training of children under 16 years.
- Pre-employment physical examinations should be performed for all children and physicians should inquire about the type of work intended.
- Education: programmes about the hazards of child labour need to be developed with leadership provided by Ministry of Health, Ministry of Labour, Ministry of Education and NGOs for dissemination to children, parents, teachers and the business community.
- The surveillance of all out-of-school children in the community should be



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**Appendix 1**

Interview questionnaire of working children aged from 10 to 16 years from Irbid, Jarash and Northern Jordan valley:

**Part 1:** Socio-demographic and job characteristics of working children

1- Name .....

2- Gender

Male / Female

3- Date of birth

--/--/19--

4- Address .....

5- Are you still at school ?

Yes / No

6- At what age did you leave school?

7- At what age did you start your job?

8- What is the nature of your job ?

-----

10- Do you get a salary ?

Yes / No

11- What is your monthly income ?

-----

12- How many hours do you work per week ?

13- Do you work at night ?

Yes / No

14- Do you smoke ?

Appendices

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**Part 2 : Socioeconomic characteristics**

- 1- How many people are living in your household?
- 2- What number are you in the family ?
- 3- Are there any children aged under 16 years in your household ? Yes / No
- 4- What is the number in each age group ?

10-11.....

12-13.....

14-15.....
- 5- Do you have any working brother or sister ? Yes / No
- 6- What is the job of each of each one ?

I- ----- II ----- III -----
- 7- Are both of your parents a live ? Yes / No
- 8- Dose your father work ? Yes / No
- 9- What is his job ?-----
- 10- What is his education level?-----
- 11- Dose your mother work ? Yes / No
- 12- What is her job ?-----
- 13- What is her education level ?-----
- 14- How much is the entire family income including your salary ? -----
- 15- Does the family own the accommodation ? Yes / No
- 16- How many meters is the house square ?
- 17- How many bed rooms in the house ?-----
- 18- Does the accommodation have a separated kitchen ? Yes / No

Appendices

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19-	Does the accommodation have a central heating ?	Yes / No
20-	Is there a phone in the house ?	Yes / No
21-	Is there a T.V in the house ?	Yes / No
22-	Is there a video in the house ?	Yes / No
23-	Is there a fridge in the house ?	Yes / No
24-	Is there a satellite in the house ?	Yes / No
25-	Does the family own a car ?	Yes / No

**Part 3:** Anthropometry and morbidity assessment

1-The child anthropometric measurement

Weight (kg)	-----
Height (cm)	-----
Skin fold thickness (mm)	-----
2-PCV	-----
3-Peak Expiratory Flow Rate (PEFR)	-----

4-Morbidity assessment during the last year

\*Skin lesion

Burns	Yes / No
Cuts	Yes / No

\*Muscular and Skeletal system

Back pain	Yes / No
Joint pain	Yes / No

\*Eye

Recurrent eyes redness	Yes / No
------------------------	----------



Appendices

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\*Teeth

Dental caries	Yes / No
---------------	----------

5-Sibling anthropometric measurement

Weigh (kg)	-----
------------	-------

Height (cm)	-----
-------------	-------

Skin fold thickness	-----
---------------------	-------

6-PCV	-----
-------	-------

7-Mother height	-----
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Interview questionnaire of non-working children aged from 10 to 16 years from Irbid, Jarash and Northern Jordan valley:

**Part 1:** Socio-demographic characteristics of non working children

- 1- Name .....
- 2- Gender

Male / Female
- 3- Date of birth

--/--/19--
- 4- Address .....
- 5- Do you work after school time ?

Yes / No
- 6- Do you smoke ?

Yes / No

**Part 2 :** Socioeconomic characteristics

- 1- How many people are living in your household?
- 2- What number are you in the family ?
- 5- Do you have any working brother or sister ?

Yes / No
- 6- What is the job of each of each one ?

I- ----- II ----- III -----
- 7- Are both of your parents a live ?

Yes / No
- 8- Dose your father work ?

Yes / No
- 9- What is his job ?

-----
- 10- What is his education level?

-----
- 11- Dose your mother work ?

Yes / No

Appendices

---

- 12-

What is her job ?

-----
- 13-

What is her education level ?

-----
- 14-

How much is the entire family income ? -----
- 15-

Does the family own the accommodation ?

Yes / No
- 16-

How many meters is the house square ?
- 17-

How many bed rooms in the house ?

-----
- 18-

Does the accommodation have a separated kitchen ?

Yes / No
- 19-

Does the accommodation have a central heating ?

Yes / No
- 20-

Is there a phone in the house ?

Yes / No
- 21-

Is there a T.V in the house ?

Yes / No
- 22-

Is there a video in the house ?

Yes / No
- 23-

Is there a fridge in the house ?

Yes / No
- 24-

Is there a satellite in the house ?

Yes / No
- 25-

Does the family own a car ?

Yes / No

**Part 3:** Anthropometry and morbidity assessment

1-The child anthropometric measurement

Weight (kg)

-----

Height (cm)

-----

Skin fold thickness (mm)

-----

2-PCV

-----

3-Morbidity assessment during the last year

\*Skin lesion



## Appendices

Burns	Yes / No
-------	----------

Cuts	Yes / No
------	----------

## \*Muscular and Skeletal system

Back pain	Yes / No
-----------	----------

Joint pain	Yes / No
------------	----------

\*Eye

Recurrent eyes redness	Yes / No

\*Teeth

Dental caries	Yes / No
---------------	----------

Appendix 3

Adaptive Behavior Scale of working and non working children in Jordan

I- Violent Behavior

Occasionally      Frequently

1- Threatens

- Indirectly cause injury to the others
- Throws objects to the others
- Hurts animals
- Bites others
- Spits on other

1		2
1	○	2
1		2
1		2
1		2
<hr/>		<hr/>

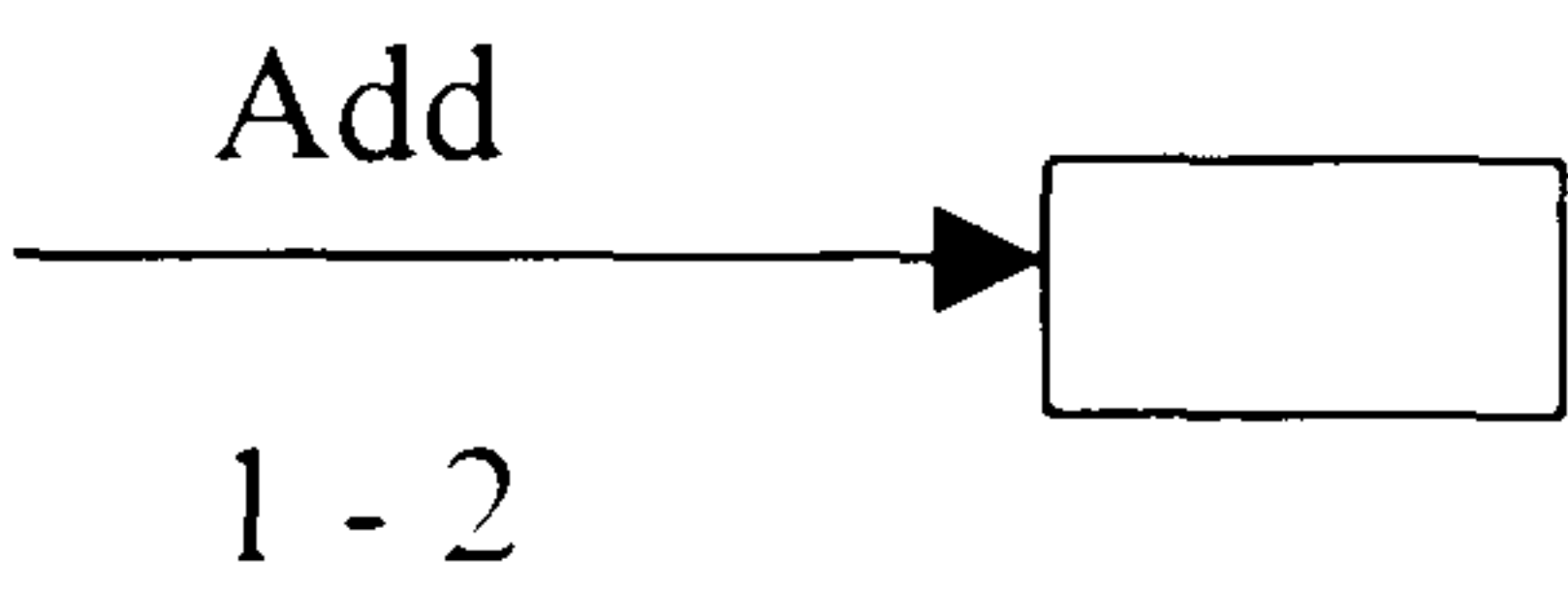
Total

2- Violent temper

- Cries and screams
- Throws self on floor, screaming and yelling
- Breaks windows
- Tears up books, magazines, or clothes

1		2
1	○	2
1		2
1		2
<hr/>		<hr/>

Total



II- Antisocial Behavior

3- Teases or gossips about others

- Tells untrue or exaggerated stories about others
- Make fun others
- Teases others
- Picks on others

1		2
1		2
1	○	2
1		2
<hr/>		<hr/>

Total

4- Bosses and manipulated others

- Demands services from others
- Cause fights among other people
- Manipulates others to get them in troubles

1		2
1	○	2
1		2
<hr/>		<hr/>

Total

5- Inconsiderate of others

- Turn TV or radio on too loudly
- Make loud noises while others are reading or sleeping
- Talks too loudly

1		2
1	○	2
1		2
<hr/>		<hr/>

Total

6- Uses angry language

- Uses hostile language e.g. stupid. dog and donkey, dirty, big....
- Uses obscene language
- Verbally threatens others, suggesting physical violence

1		2
1	○	2
1		2
<hr/>		

Total

Add

→

3 - 6

III- Rebellious behavior

7- Ignore regulations or regular routines

- Has negative attitude toward rules
- Violates rules or regulations
- Refuse to participate in required activities e.g. work, school etc
- Hesitates for long periods before doing assigned tasks

1		2
1	○	2
1		2
1		2
<hr/>		

Total

8- Absent from the proper assignments or places

- Leaves place of required activity without permission e.g. work, class etc
- Is absent from routine activities e.g. work, class etc
- Stays out late at night from home

1		2
1	○	2
1		2
<hr/>		

Total

9- Misbehaves in group settings

- Interrupts group discussion by talking
- Disrupts group activities by making loud noises
- Disrupts group by refusing follow rules

1		2
1	○	2
1		2
<hr/>		

Total

Add

→

7-9



IV-Psychological disturbances

10- Reacts poorly to criticism

- Withdraws or pouts when criticized
- Screams and cries when corrected
- Dose not talk when corrected

1		2
1	○	2
1		2
<hr/>		<hr/>

Total

11- Demand excessive attention

- Jealous of attention given to others
- Acts silly to gain attention
- Demands excessive assurance

1		2
1	○	2
1		2
<hr/>		<hr/>

Total

12- Emotional instabilities

- Changes mood without apparent reason
- Complains of bad dreams
- Cries out while asleep
- Cries for non apparent reason

1		2
1		2
1	○	2
1		2
<hr/>		<hr/>

Total

